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The Record Effect

How technology has transformed the sound of music

Ninety-nine years ago, John Philip Sousa predicted that recordings would lead to the demise of music. The phonograph, he warned, would erode the finer instincts of the ear, end amateur playing and singing, and put professional musicians out of work. "The time is coming when no one will be ready to submit himself to the ennobling discipline of learning music," he wrote. "Everyone will have their ready made or ready pirated music in their cupboards." Something is irretrievably lost when we are no longer in the presence of bodies making music, Sousa said. "The nightingale's song is delightful because the nightingale herself gives it forth."

Before you dismiss Sousa as a nutty old codger, you might ponder how much has changed in the past 100 years. Music has achieved onrushing omnipresence in our world: millions of hours of its history are available on disk; rivers of digital melody flow on the Internet; MP3 players with 10,000 songs can be tucked in a back pocket or a purse. Yet, for most of us, music is no longer something we do ourselves or even watch other people doing in front of us. It has

become a radically virtual medium, an art without a face. In the future, Sousa's ghost might say, reproduction will replace production entirely. Zombified listeners will shuffle through the archives of the past, and new music will consist of rearrangements of the old.

Ever since Edison introduced the wax cylinder, in 1877, people have been trying to figure out what recording has done for and to the art of music. Inevitably, the conversation has veered toward rhetorical extremes. Sousa was a pioneering spokesman for the party of doom, which was later filled out by various post-Marxist theorists. In the opposite corner are the technological utopians, who will tell you that recording has not imprisoned music but liberated it, bringing the art of the elite to the masses and the art of the margins to the center. Before Edison came along, the utopians say, Beethoven's symphonies could be heard only in select concert halls. Now CDs carry the man from Bonn to the corners of the earth, summoning forth the million souls he hoped to embrace in his "Ode to Joy." Conversely, recordings gave the likes of Louis Armstrong, Chuck Berry, and James Brown the chance to occupy a global platform that Sousa's idyllic old America, racist to the core, would have denied them. The fact that their records played a crucial role in the advancement of African American civil rights puts in proper perspective the aesthetic debate about whether or not technology has been "good" for music.

I discovered much of my favorite music through LPs and CDs, and I am not about to join the party of Luddite lament. Modern urban environments are often so chaotic, soulless, or ugly that I'm grateful for the humanizing touch of electronics. But I want to be aware of technology's effects, positive and negative. For music to remain vital, recordings have to exist in balance with live performance, and, these days, live performance is by far the smaller part of the equa-

tion. Perhaps we tell ourselves that we listen to CDs in order to get to know the music better or to supplement what we get from concerts and shows. But, honestly, a lot of us don't go to hear live music that often. Work leaves us depleted. Tickets are too expensive. Concert halls are stultifying. Rock clubs are full of kids who make us feel ancient. It's just so much easier to curl up in the comfy chair with a Beethoven quartet or Billie Holiday. But would Beethoven or Billie ever have existed if people had always listened to music the way we listen now?

"The machine is neither a god nor a devil," the German music critic Hans Stuckenschmidt wrote in 1926, in an essay on the mechanization of music. That eminently reasonable sentiment appears as an epigraph of Mark Katz's *Capturing Sound: How Technology Has Changed Music*. It's one of a number of recent books on the history of recording; two others are Colin Symes's *Setting the Record Straight: A Material History of Classical Recording,* which analyzes how the discourse around LPs and CDs shapes what we hear; and Robert Philip's *Performing Music in the Age of Recording,* which advances a potent thesis about how the phonograph transformed classical culture. Katz's book is the most approachable of these tomes. In lucid, evenhanded prose, it ranges all over the map, from classical to hip-hop. Although Katz believes that machines have profoundly affected how music is played and heard, he discourages a monolithic, deterministic idea of their impact. Ultimately, he says, the technology reflects whatever musical culture is exploiting it. The machine is a mirror of our needs and fears.

The principal irony of phonograph history is that the machine was not invented with music in mind. Edison conceived of his cylinder as a tool for business communication: it would replace the costly, imperfect practice of stenography and would have the added virtue of preserving in per-

petuity the voices of the deceased. In an 1878 essay, Edison (or his ghostwriter) proclaimed portentously that his invention would "annihilate time and space, and bottle up for posterity the mere utterance of man." Annihilation is, of course, an ambiguous figure of speech. Recording broke down barriers between cultures, but it also placed more archaic musical forms in danger of extinction. In the early years of the century, Béla Bartók, Zoltán Kodály, and Percy Grainger used phonographs to preserve the voices of elderly folksingers whose timeless ways were being stamped out by the advance of modern life. And what was helping to stamp them out? The phonograph, with its international hit tunes and standardized popular dances.

In the 1890s, alert entrepreneurs installed phonographs in penny arcades, allowing customers to listen to favorite songs over ear tubes. By 1900, the phonograph was being marketed as a purely musical device. Its first great star was an operatic tenor, Enrico Caruso, whose voice remains one of the most transfixing phenomena in the history of the medium. The ping in his tone, that golden bark, penetrated the haze of the early technology and made the man himself viscerally present. Not so lucky was Johannes Brahms, who, in 1889, attempted to play his First Hungarian Dance for Edison's cylinder. It sounds as if the master were coming to us from a spacecraft disintegrating near Pluto. There was something symbolic in Edison's inability to register so titanic a presence as Brahms: despite Caruso's fame, and despite later fads for Toscanini, Bernstein, and Glenn Gould, classical music had a hard time getting a foothold in this slippery terrain. From the start, the phonograph favored brassy singing, knife-edged winds and brass, the thump of percussion—whatever could best puncture surface noise. Louis Armstrong's trumpet blasted through the crackle and pop of early records like no other instrument or

voice of the time—he was Caruso's heir. Pianos, by contrast, were muddled and muffled; violins were all but inaudible. Classical music, with its softer-edged sounds, entered the recording era at a disadvantage. The age of the cowbell had begun.

Whenever a new gadget comes along, salespeople inevitably point out that an older gadget has been rendered obsolete. The automobile pushed aside the railroad; the computer replaced the typewriter. Sousa feared that the phonograph would supplant live music making. His fears were excessive but not irrational. Early ads for the phonograph took aim at the piano, which, around the turn of the century, was the center of domestic musical life, from the salon to the tavern. The top-selling Victrola of 1906 was encased in "piano-finished" mahogany, if anyone was missing the point. An ad reproduced in Colin Symes's book shows a family clustered about a phonograph, no piano in sight. Countless ad campaigns since have claimed that recordings are just as good as live performances, possibly better—combining, supposedly, the warmth of live music with the comfort of home. They have provided, to use some well-worn phrases, "the best seat in the house," "living presence," "perfect sound forever." They inspired the famous question, "Is it live or is it Memorex?" (If it's Memorex, is it dead?) Edison was so determined to demonstrate the verisimilitude of his machines that he held a nationwide series of Tone Tests, during which halls were plunged into darkness and audiences were supposedly unable to tell the difference between Anna Case singing live and one of her records.

It's easy to laugh now at the spectacle of the Tone Tests. Either Edison was engaging in serious hanky-panky, or audiences were so eager to embrace the new technology that they hypnotized themselves into ignoring the wheeze of

cylinder static. But a hipper form of the same mumbo-jumbo is heard in high-end audio showrooms, where $10,000 systems purport to recreate an orchestra in your living room. Even if such a machine existed, the question once posed by the comedians Flanders and Swann lingers: Why would we want an orchestra in our living room? Isn't the idea of sitting in a room listening to a tape of 500 people performing the Mahler Eighth Symphony totally bizarre—the diametrical opposite of the great communal ceremonies that Mahler yearned to enact? So says the party of doom. The party of hope responds: Audiences generally ignored or misunderstood Mahler until repeated listening on LPs made his music comprehensible.

Like Heisenberg's mythical observer, the phonograph was never a mere recorder of events: it changed how people sang and played. Katz, in a major contribution to the lingo, calls these changes "phonograph effects." (The phrase comes from the digital studio, where it is used to describe the crackling, scratching noises that are sometimes added to pop-music tracks to lend them an appealingly antique air.) Katz devotes one striking chapter to a fundamental change in violin technique that took place in the early 20th century. It involved vibrato—that trembling action of the hand on the fingerboard, whereby the player is able to give notes a warbling sweetness. Until about 1920, vibrato was applied quite sparingly. On a 1903 recording, the great violinist Joseph Joachim uses it only to accentuate certain highly expressive notes. (The track is included on a CD that comes with Katz's book.) Around the same time, Fritz Kreisler began applying vibrato almost constantly. By the 1920s, most leading violinists had adopted Kreisler's method. Was it because they were imitating him? Katz proposes that the change came about for a more pedestrian reason. When a

wobble was added to violin tone, the phonograph was able to pick it up more easily: it's a "wider" sound in acoustical terms, a blob of several superimposed frequencies. Also, the fuzzy focus of vibrato enabled players to cover up slight inaccuracies of intonation, and, from the start, the phonograph made players self-conscious about intonation in ways they had never been before. What worked in the studio then spread to the concert stage. Katz can't prove that the phonograph was responsible for the change, but he makes a good case.

Composers, who had reigned like gods over the dearly departed 19th century, were uncertain and quizzical in the face of the new device. Symes amusingly tracks the ambivalence of Igor Stravinsky, who styled himself the most impeccably up-to-date of composers. In 1916, the conductor Ernest Ansermet brought Stravinsky a stack of American pop records and sheet music, Jelly Roll Morton's "Jelly Roll Blues" possibly among them, and the composer swooned. "The musical ideal," he called them, "music spontaneous and 'useless,' music that wishes to express nothing." (Not quite what Jelly Roll had in mind.) Stravinsky began writing with the limitations of the phonograph in mind: short movements, small groups of instruments, lots of winds and brass, few strings. On his first American tour, in 1925, he signed a contract at Brunswick Studios, where Duke Ellington later set down "East St. Louis Toodle-O." Then, in the next decade, he abruptly adopted the John Philip Sousa line: "Oversaturated with sounds, blasé even before combinations of the utmost variety, listeners fall into a kind of torpor which deprives them of all power of discrimination." By the 1940s, Stravinsky was living in America, and, seeking new avenues of exposure, he embraced recording once again. He went so far as to endorse the Stromberg-Carlson Custom 400 loudspeaker, comparing it to a "fine microscope." You

could try to find some consistent theory behind these statements, but the short version is that Stravinsky was confused.

The youngest composers of the 1920s—those who had come of age during and after the First World War—had no hesitation about submitting to the phonograph. Perhaps Katz's most fascinating chapter is devoted to the short-lived Grammophonmusik phenomenon in German music of the 1920s and early 1930s. Paul Hindemith, Kurt Weill, Ernst Toch, and Stefan Wolpe seized upon the phonograph not merely as a means for preserving and distributing music but as a way of making it. Wolpe was the first to take the plunge; at a Dada concert in 1920, he put eight phonographs on a stage and had them play parts of Beethoven's Fifth at different speeds. Weill wrote an interlude for solo record player—playing "Tango Angèle," his first "hit"—in the au-courant 1927 opera *The Tsar Has Himself Photographed.* Hindemith and Toch experimented with performances involving phonographs; fragmentary evidence of their legendary 1930 Gramophone Concert can be found on Katz's CD, and it's some of the craziest damn stuff you'll ever hear. We are only a step or two away from the electronic avant-garde of John Cage, whose "Imaginary Landscape No. 1," for piano, cymbals, and variable-speed turntables, dates from 1939. It turns out that the teenage Cage attended the Gramophone Concert during a summer break from school.

With the arrival of magnetic tape, the relationship between performer and medium became ever more complex. German engineers perfected the magnetic tape recorder, or Magnetophon, during the Second World War. Late one night, an audio expert turned serviceman named Jack Mullin was monitoring German radio when he noticed that an overnight orchestral broadcast was astonishingly clear: it sounded "live," yet not even at Hitler's whim could the orchestra have been playing Bruckner in the middle of

the night. After the war was over, Mullin tracked down a Magnetophon and brought it to America. He demonstrated it to Bing Crosby, who used it to tape his broadcasts in advance. Crosby was a pioneer of perhaps the most famous of all technological effects, the croon. Magnetic tape meant that Bing could practically whisper into the microphone and still be heard across America; a marked drop-off in surface noise meant that vocal murmurs could register as vividly as Louis Armstrong's pealing trumpet.

Magnetic tape also meant that performers could invent their own reality in the studio. Errors could be corrected by splicing together bits of different takes. In the 1960s, the Beatles and the Beach Boys, following in the wake of electronic compositions by Cage and Stockhausen, began constructing intricate studio soundscapes that they never could have replicated onstage; even Glenn Gould would have had trouble executing the mechanically accelerated keyboard solo in "In My Life." The great rock debate about authenticity began. Were the Beatles pushing the art forward by reinventing it in the studio? Or were they losing touch with the earthy intelligence of folk, blues, and rock traditions? Bob Dylan stood at a craggy opposite extreme, turning out records in a few days' time and avoiding any vocal overdubs until *Blood on the Tracks,* the 14th record of his career. Yet frills-free, "lo-fi" recording has no special claim on musical truth; indeed, it easily becomes another phonograph effect, the effect of no effect. Even Dylan cannot escape the fictions of the medium, as he well knows: "I'm gazing out the window / Of the St. James Hotel / And I know no one can sing the blues / Like Blind Willie McTell."

In the 1980s, as Dutch and Japanese engineers introduced digital recording in the CD format, the saga of the phonograph experienced a final twist. Katz, in the last chapters of his book, delights in following the winding path from

Germany in the 1920s to the South Bronx in the 1970s, where the turntable became an instrument once again. DJs like Kool Herc, Afrika Bambaataa, and Grandmaster Flash used turntables to create a hurtling collage of phonograph effects—loops, breaks, beats, scratches. The silently observing machine was shoved into the middle of the party. It was assumed at first that this recording-driven music could never be recorded itself: the art of the DJ was all about fast moves over long duration, stamina and virtuosity combined. As Jeff Chang notes in his new book *Can't Stop Won't Stop: A History of the Hip-Hop Generation,* serious young d.j.s like Chuck D, on Long Island, laughed when a resourceful record company put out a rap novelty single called *Rapper's Delight.* How could a single record do justice to those endless parties in the Bronx where, in a multimedia rage of beats, tunes, raps, dances, and spray-painted images, kids managed to forget for a while that their neighborhood had become a smoldering ruin? The record labels found a way, of course, and a monster industry was born. Nowadays, hip-hop fans are apt to claim that live shows are dead experiences, messy reenactments of pristine studio creations.

Recording has the unsettling power to transform any kind of music, no matter how unruly or how sublime, into a collectible object, which becomes decor for the lonely modern soul. It thrives on the buzz of the new, but it also breeds nostalgia, a state of melancholy remembrance and, with that, indifference to the present; you can start to feel nostalgic for the opening riff of a new favorite song even before you reach the end. Thomas Mann described the phonograph's ambiguous enchantments in the "Fullness of Harmony" chapter of *The Magic Mountain,* published in 1924. When a deluxe gramophone arrives at the Berghof sanitarium, it sends mixed messages to the young man who operates it. At times it sings "a new word of love" (shades of

Robert Johnson's "Phonograph Blues"); at times it exudes "sympathy for death." At the end of the novel, the hero goes marching toward an inferno of trench warfare, obliviously chanting the Schubert tune that the gramophone taught him. These days, he'd be rapping.

Throughout the 20th century, classical musicians and listeners together indulged the fantasy that they were living outside the technological realm. They cultivated an atmosphere of timelessness, of detachment from the ordinary world. Perhaps it's no accident that concert dress stopped evolving right about the time that Edison's cylinder came in: performers wished to prolong forever those last golden hours of the aristocratic age. Recording was well liked for its revenue-generating potential, but musicians preferred to think of it as a means of transcribing in the most literal manner the centuries-old classical performance tradition. With scattered exceptions—Weimar-era experimenters, postwar electronic composers, mavericks like Glenn Gould and the producer John Culshaw—musicians avoided the hey-let's-try-this spirit that defined pop recording from the start. As Symes points out, classical releases were prized for their unadorned realism. Recordings were supposed to deny the fact that they were recordings. That process involved, paradoxically, considerable artifice. Overdubbing, patching, knob-twiddling, and even digital effects such as "pitch correction" are as common in the classical studio as in pop. The phenomenon of the dummy star, who has a hard time replicating onstage what he or she purports to do on record, is not unheard of.

Robert Philip, in *Performing Music in the Age of Recording,* points out that the vaunted transparency of classical recording is often a micromanaged illusion and then goes further; he suggests that technology fundamentally altered

the tradition that it was intended to preserve. Violin vibrato, as discussed in Mark Katz's book, is but one example of a phonograph effect in classical performance. Philip shows how every instrument in the orchestra acquired a standard profile. Listening to records became a kind of mirror stage through which musicians confronted their "true" selves. "Musicians who first heard their own recordings in the early years of the twentieth century were often taken aback by what they heard, suddenly being made aware of inaccuracies and mannerisms they had not suspected," Philip writes. As they adjusted their playing, they entered into a complex process that Katz calls a "feedback loop."

Feedback is what happens when an electric-guitar player gets too close to an amp and the amp starts squealing. Feedback in classical performance is the sound of musicians desperately trying to embody the superior self they glimpsed in the mirror and, potentially, turning themselves into robots in the process. Philip begins his book with a riveting description of concerts at the turn of the last century. "Freedom from disaster was the standard for a good concert," he writes. Rehearsals were brief, mishaps routine. Precision was not a universal value. Pianists rolled chords instead of playing them at one stroke. String players slid expressively from one note to the next—portamento, the style was called—in imitation of the slide of the voice. And the instruments themselves sounded different, depending on the nationality of the player. French bassoons had a reedy, pungent tone, quite unlike the rounded timbre of German bassoons. French flutists, by contrast, used more vibrato than their German and English counterparts, creating a warmer, mellower aura. American orchestral culture, which brought together immigrant musicians from all countries, began to erode the differences, and recordings canonized the emergent standard practice. Whatever style sounded cleanest on

the medium—in these cases, German bassoons and French flutes—became the gold standard that players in conservatories copied. Young virtuosos today may have recognizable idiosyncrasies, but their playing seldom indicates that they came from any particular place or emerged from any particular tradition.

Archival reissues give tantalizing glimpses of the world as it was. Philip notes that in a 1912 performance the great Belgian violinist Eugène Ysaÿe "sways either side of the beat, while the piano maintains an even rhythm." In disks by the Bohemian Quartet, he says, "each player is functioning as an individual," reacting with seeming spontaneity to the personalities of the others. Edward Elgar's recordings of his Second Symphony and Cello Concerto, from 1927 and 1928, respectively, are practically explosive in impact, destroying all stereotypes of the composer as a staid Victorian gentleman. No modern orchestra would dare to play as the Londoners played for Elgar: phrases precipitously step over one another, tempos constantly change underfoot, rough attacks punch the clean surface. The biographical evidence suggests that this borderline-chaotic style of performance was exactly what Elgar wanted. "All sorts of things which other conductors carefully foster, he seems to leave to take their chance," a critic observed. Modern recordings of Elgar are so different in sound and spirit that they seem to document a different kind of music altogether. The symphonies have turned into monumental processional rituals, along the lines of the symphonies of Bruckner or at least the version of Bruckner that conductors now give us.

All those lost tics and traits—swaying on either side of the beat, sliding between notes, breaking chords into arpeggios, members of a quartet going every which way—are alike in bringing out the distinct voices of the players, not to

mention the mere fact that they are fallible humans. Philip writes, "If you hear the Royal Albert Hall Orchestra sliding, you may or may not like it, but you cannot be unaware of the physical process of playing." Most modern performance tends to erase all evidence of the work that goes into playing: virtuosity is defined as effortlessness. One often-quoted ideal is to "disappear behind the music." But when precision is divorced from emotion it can become antimusical, inhuman, repulsive.

Is there any escape from the "feedback loop"? Philip, having blamed recordings for a multitude of sins, ends by saying that they might be able to come to the rescue. By studying artifacts from the dawn of the century, musicians might recapture what has gone missing from the perfectionist style. They can rebel against the letter of the score in pursuit of its spirit. But there are enormous psychic barriers in the way of such a shift: performers will have to be unafraid of indulging mannerisms that will sound sloppy to some ears, of committing what will sound like mistakes. They will have to defy the hypercompetitive conservatory culture in which they came of age, and also the hyperprofessionalized culture of the ensembles in which they find work.

In at least one area, though, performance style has undergone a sea change. Early music has long had the reputation of being the most pedantically "correct" subculture in classical music; Philip exposes its contradictions in one chapter of his book. But the more dynamic Renaissance and baroque specialists—Jordi Savall, Andrew Manze, the Venice Baroque Orchestra, Il Giardino Armonico, William Christie's Les Arts Florissants—are exercising all the freedoms that Philip misses in modern performance: they execute some notes cleanly and others roughly; they weave around the beat instead of staying right on top of it; they

slide from note to note when they are so moved. As a result, the music feels liberated, and audiences tend to respond in kind, with yelps of joy.

Philip, at the end of his masterly thesis, is left with an uncertainty. No matter how much evidence he accumulates, he can't quite prove that classical playing became standardized because the phonograph demanded it. Records cannot be entirely to blame, he admits: otherwise, similar patterns would surface in popular music, which, whatever its problems, has never lacked for spontaneity. The urge toward precision was already well under way in the late 19th century, when Hans von Bülow's Meiningen orchestra was celebrated as the best-rehearsed of its time and when the big new orchestras of America, the Boston Symphony first and foremost, astonished European visitors like Richard Strauss and Gustav Mahler with the discipline of their playing. Other technologies that preceded the phonograph also changed how people played and listened. Those who got to know music on a well-tuned piano began to expect the same from an orchestra. The sonic wonders of Boston's Symphony Hall—the first hall whose acoustics were scientifically designed—placed a golden frame around the music, and the orchestra had to measure up. Most of all, classical music in America suffered from being a reproduction itself, an immaculate copy of European tradition. We've been listening to the same record for a century and a half.

Twenty years ago, the American composer Benjamin Boretz wrote, "In music, as in everything, the disappearing moment of experience is the firmest reality." The paradox of recording is that it can preserve forever those disappearing moments of sound but never the spark of humanity that generates them. This is a paradox common to technological existence: everything gets a little easier and a little less real.

Then again, the reigning unreality of the electronic sphere can set us up for a new kind of ecstasy, once we unplug ourselves from our gadgets and expose ourselves to the risk of live performance. Recently at Carnegie Hall, Gidon Kremer and the Baltimore Symphony played Shostakovich's First Violin Concerto, and over and above the physical power of Kremer's playing—his tone ran the gamut from the gnawingly raw to the angelically pure—the performance offered the shock of the real: on an average, bustling New York night, Shostakovich bore down on the audience like a phantom train.

In 1964, Glenn Gould made a famous decision to renounce live performance. In an essay published two years later, "The Prospects of Recording," he predicted that the concert would eventually die out, to be replaced by a purely electronic music culture. He may still be proved right. For now, live performance clings to life and, in tandem, the classical-music tradition that could hardly exist without it. As the years go by, Gould's line of argument, which served to explain his decision to abandon the concert stage, seems ever more misguided and dangerous. Gould praised recordings for their vast archival possibilities, for their ability to supply on demand a bassoon sonata by Hindemith or a motet by Buxtehude. He gloried in the extraordinary interpretive control that studio conditions allowed him. He took it for granted that the taste for Buxtehude motets or for surprising new approaches to Bach could survive the death of the concert—that somehow new electronic avenues could be found to spread the word about old and unusual music. Gould's thesis is annulled by cold statistics: classical-record sales have plunged, while concert attendance is anxiously holding steady. Ironically, Gould himself remains, posthumously, one of the last blockbuster classical recording artists: Sony Classical's recent rerelease of his two interpretations of

Bach's Goldberg Variations sold 200,000 copies. That's surely not what Gould had in mind for the future of the medium.

A few months after Gould published his essay, the Beatles, in a presumably unrelated development, played their last live show, in San Francisco. They spent the rest of their short career working in the recording studio. They proved, as did Gould, that the studio breeds startlingly original ideas; they also proved, as did Gould, that it breeds a certain kind of madness. I'll take *Rubber Soul* over *Sgt. Pepper's,* and Gould's 1955 Goldbergs over his 1981 version, because the first recording in each pair is the more robust, the more generous, the more casually sublime. The fact that the Beatles broke up three years after they disappeared into the studio, and the fact that Gould died in strange psychic shape at the age of 50, may tell us all we need to know about the seductions and sorrows of the art of recording.