



**WACKY INSTRUMENTS OFTEN
RESEMBLE BAD PLUMBING, BUT ALL ARE
WELCOME IN THE ECLECTIC LIGHT
ORCHESTRA OF EXPERIMENTAL MUSIC**

ONE AFTERNOON LATE IN THIS NOISY CENTURY, Ken Butler was rummaging through his basement in Portland, Oregon. Amidst the assorted junk, he found a most unlikely musical instrument. It was an axe, rusty and dull. If it talked, the old tool might have told a tale. But did it have a song inside? What would an axe with strings sound like? Butler wondered. Would it whine? Hum? Mimic its cousin, pianist Emanuel Ax? Or would it just hack at wooden ears? Butler, a sculptor and painter, was also a fan of rock and the blues. He knew that many guitarists called their instruments “my axe,” so just for fun, he decided to let a real axe call the tune.

CONCERTO FOR PENCILINA AND SEWER FLUTE

Thumbing his nose at eons of musical history, Butler scrounged up a violin's spare parts. He glued on a fingerboard, attached a bridge, strings and tuning pegs to the axe, clipped on an electric guitar pickup and plugged it into his amp. He raised his bow. The axe, silent since the Stone Age, made its musical debut. Its song was surprisingly like a violin's, but more tinny and metallic. You were expecting, maybe, Stradivarius? Still, Butler's instrument was certainly on the cutting edge of modern musical invention.

Twenty years later, not a single composer has written a concerto for Axe-Violin. Nonetheless, Butler's mutant instrument is a proud member of an eclectic light orchestra. Listen! The halls are alive with the sound of hardware. In workshops and studios across the country, mad musical inventors are tuning up. The conductor taps his baton. Butler, first Axe-Violin, plays the opening strains. In the horn section, the Car Horn Organ harmonizes the beeps of Fords and Fiats, while in the strings, players pluck two-story harplike contrivances and Diddley Bows. Percussionists keep time by pounding on flow-

BY BRUCE WATSON

PHOTOGRAPHS BY THEO WESTENBERGER



His mother's old dress form, a flashlight, a sled—each inspired Ken Butler. When bowed, the 45 rpm record on his Push Broom Cello makes a screeching sound; the bristles can be bowed, plucked or scraped.

erpots, bedpans and, of course, the kitchen sink. After opening with the Goldberg Variations—that's Rube, not Bach—the program turns to pieces played on paraphernalia that frequently resemble bad plumbing.

You won't hear these instruments at the philharmonic anytime soon. Not even jazz musicians are ready for Reed Ghazala's Photon Clarinet, two light sensors connected to a box filled with short-circuited wiring. And the Balloon Kit, played by rubbing, pinching and squeezing an ensemble of balloons, may not be your idea of a little night music. Yet for today's sound sculptors, the proof of music is in putting it together, often with nuts and bolts. They are using new instruments to make music that can be merely weird but is more often whimsical and even mystifying.

SUCH EXPERIMENTING IS AS OLD as music itself. Imagine any object that can be twanged, tooted, bashed or bowed, and someone, somewhere, sometime, has tried to play it. From brass behemoths and woodwinds with Germanic names—flugelhorn, hellhorn and heckelphone—to delicate stringed things that look like twisted looms, musical inventions abound in eccentricity. All of today's common instruments were once bold experiments. Those that resonated with the human ear survived; others became the dodoes of music history. Consider the glass harmonica, invented by a man better known for other deeds.

Late one night in colonial Philadelphia, Deborah Franklin awoke to the sweetest music she had ever heard. Sitting up in the darkness, she felt she had died and gone to heaven, there to be serenaded by angels. But it was just her husband, Ben, jamming on his latest contraption. Diners have long known that the rim of a crystal wine glass hums sweetly when

One night in Philadelphia, Deborah Franklin awoke to the sweetest music she had ever heard. Heavenly music. But it was just her husband, Ben, jamming on his glass harmonica.

rubbed by a wet finger. Franklin's glass harmonica produced an array of such notes, which he described as "incomparably sweet beyond those of any other." He mounted 37 glass bowls on a spindle spun by pumping a treadle. Wet fingers placed on the revolving glass played three octaves of notes. Franklin invented the instrument while in England in 1761, and began playing with it, pumping its treadle and spinning out melodies.

The glass harmonica soon enthralled audiences throughout Europe. Marie Antoinette learned to play one, and Mozart composed an entire Adagio and Rondo for a quintet featuring glass harmonica. Beethoven also wrote for it. But the craze proved as fragile as the instrument itself. By the early 1800s, the glass harmonica had vanished from concert halls. Today, however, glass instruments of various types have made a comeback, at least among New Agers.

Instruments have come and gone and some have remained. One German innovator added a sexy curve to a horn and fashioned a radical new instrument. Seeking a name, he might have called it the "Adolphophone." Fortunately, on his application for a patent (granted in 1846), Adolphe Sax put "Saxophone."

Yet, in the wake of the 1960s' cultural upheavals and technological advances, musical invention has taken a quantum leap. These days, anything that makes sound is a potential

instrument. Who needs another variation on a theme when you can play "New York, New York" on car horns?

Like Ben Franklin's wife, Wendy Mae Chambers awoke to inspiring music. One morning in 1983, a distant traffic jam on the Brooklyn-Queens Expressway roused Chambers from sleep. Heard in half-consciousness, the honking resembled a symphony. "It was really quite beautiful," she tells me, "with all sorts of muffled sounds and shifting tones."

Chambers, who studied composition at Columbia University, had already taken several steps into music's twilight zone. She had composed music for vacuum cleaners and once conducted "Real Music for Nine Cars," directing honking vehicles through a parking lot. Each car had its sheet music taped to its rearview mirror. But the expressway elegy steered Chambers' music in a new direction. Soon, she was roaming through junkyards, pitchpipe in hand, to assemble an organ that would make itself heard above the rap and rumble of modern music.

Start spreading the news. Beep! I'm leaving today. Honk, honnnnk! Chambers' Car Horn Organ features 25 horns tuned by Datsun, Cadillac and Volkswagen. American horns, Chambers notes, are usually tuned to F, A and their respective sharps. Foreign cars are all over the melodic scale. Some horns emit ear-piercing honks, others modest beeps. Chambers wired them all to a pianolike keyboard and hooked the whole contraption to a car battery. *I'll make a brand new start of it—in old New York. Honkkk! Ah-oo-gah!* Chambers has tooted her own horns in parades, at auto shows, even at the Guggenheim Museum. Audience reaction is predictable, she says. People plug their ears at first. A few smile. Some hurry out of earshot. "A little bit of Car Horn Organ goes a long way," Cham-



New instrument makers regard brass as boring, woodwinds as worn out. Eccentric inventors prefer eccentric materials. Eggshells. PVC pipe. Axes.

bers quickly admits. While she may never play "Flight of the Bumblebee" on car horns, she is honking out a Christmas CD. After it's released, New York, New York, won't be the only city that never sleeps.

Many who make unusual instruments are more than just playful. Classical music is dominated by tradition. Pop is driven by dollars. In defying these establishments, a musical innovator, like a modern artist, needs a manifesto. In the quarterly journal *Experimental Musical Instruments*, inventors make somber statements about how their instruments "isolates and potentiates some acoustical or mechanical property." Shunning whimsy, many serious musicians are making serious music on serious self-made instruments. Yet when a bunch of musical inventors assemble on a single stage, one can be forgiven for cracking a smile.

It was a quiet January day at the New York Stock Exchange in 1998; trading was moderate. Yet when brokers headed home, they were met by a bullish bellowing of experimental instruments. Echoing through the World Financial Center's Winter Garden, the Reinventions Performance Series had brought in five musical inventors to serenade the barons. Chambers was there with her Car Horn Organ. Robert Grawi

When she plays "New York, New York" on her Car Horn Organ, Wendy Mae Chambers gives honky-tonk a whole new meaning.



plucked his Gravikord, a stringed instrument that resembles an upper section of the Brooklyn Bridge but sounds as sweet as several harps played in harmony. Richard Cooke played the Free Notes Gamelan, his quintet of xylophones built of aluminum and wood bars resting on plastic pipe resonators. As the suits sidled past, the musicians honked, thrummed and strummed. A few passersby danced, but most clutched their umbrellas and walked briskly outside into the relative calm of lower Manhattan. Evidently, Wall Street was not the place for such music. In the two days following the concert, the Dow fell more than 300 points. Seems brokers couldn't get the tunes out of their heads.

New instrument makers regard brass as boring, woodwinds as worn out. Eccentric inventors prefer eccentric materials. Eggshells. PVC pipe. Axes. When Ken Butler first played his Axe-Violin, he had no intention of becoming a musician. But when he found his axe, he found a calling. He soon strung more things lying around the house. Toeing the fine line between genius and insanity, Butler put strings on a snow shovel, a toy machine gun, even a golf club. His 3-wood's lone string resonates like a sitar when the club is flexed.

Butler's studio is lined with his instruments, more than 300 in all. An admirer of Cubism and nonsensical Dada art, he considers his creations sculptures as much as music makers. Many are augmented by doorstops, saw blades and hairpins that twang. Butler made his mutants just for fun, but a museum curator spotted them in his studio and offered him a show. One of his pieces is now in the Metropolitan Museum of Art's permanent collection, and he has his own CD, *Voices of Anxious Objects*. Butler's music is surprisingly melodic, with a Middle Eastern flavor. He has per-

formed on MTV and in museums and clubs all over the world. Two decades after picking up his axe, Butler still can't believe it became a career. "People ask me what I do, and I say, 'I make instruments out of toothbrushes and snow shovels and play them live.' And they say, 'Yeah, sure, Ken . . . uh, tell me when you've got a show coming up.'"

BUTLER'S SUCCESS MAY BE BAF-
fling, yet classical musicians have a word for it: "scherzo," Italian for "joke." Among composers, Beethoven and Haydn were notorious jokers, punctuating their works with sudden, spry moments or humorous effects. But today's inventors are adding the scherzo to instruments themselves. "Some call themselves artists with a capital A," says Bart Hopkin, publisher of *Experimental Musical Instruments*. "But a campy self-mockery is a very important part of the process." Hopkin's own instruments are a good example. His Seaweed Horn is made from dried bull kelp. Hold the Seaweed Horn to your ear and you can hear the ocean laughing.

Once you have the manifesto, the material and the mirth, only one question remains—to plug in or not to plug in? The question has bothered musical inventors ever since the Theremin. Perhaps you haven't heard of the Theremin, but you have heard it. You just didn't recognize it as anything from this part of the solar system. Its eerie oooh-weee-ooooo musical-saw-like sounds have accompanied science-fiction films such as *The Day The Earth Stood Still*, the theme to TV's *My Favorite Martian*, and the Beach Boys' classic tune "Good Vibrations." First demonstrated by Russian physicist Leon Theremin in 1920, the Theremin is one of the world's earliest electronic instruments. Its vibrations are produced by high-frequency oscillators, other electronic

gewgaws and loving hands. Two wires protrude from the instrument's switched-on box, one straight, the other looped. Place one hand near the loop to control the volume, and wave your other hand, Zubin Mehta-style, beside the straight wire. The closer your conducting hand comes to the wire, the higher the pitch.

In its heyday, the Theremin was a concert instrument. In 1922, Theremin himself played for Lenin, and he soon went on a series of international tours to demonstrate the new Soviet instrument. Five years later, Theremin played at New York's Carnegie Hall, and in 1929 RCA licensed his invention and began manufacturing it. Soon the Theremin was played by some 700 professional "Thereminists" who made the thing sound like a nightingale warbling hymns to Orpheus, with occasional static. But within a few years, alas, the Theremin was all but forgotten. It was, however, championed by Robert Moog, whose 1964 synthesizer was at first considered a fad but has since become a common fixture in popular music. So, turn on and plug in? Or remain earthbound and acoustic? One inventor, whose music is more inspired than wacky, has it both ways.

IN A HILL NEAR DOWNTOWN Seattle is the laboratory of a symphonic Dr. Frankenstein. The spacious three-story studio is filled with tuneful spare parts. A half-dozen trombones hang in a cluster from the high ceiling. In a corner sits a piano, its keyboard mounted by a monstrous machine capable of playing all its keys at once. Along the walls, cabinets and drawers overflow with wires, circuitboards and switches. And seated in the middle of the lab is its resident wizard, Trimpin. Lean and wiry, with shoulder-length graying hair, he seems the very model of a mad inventor. "I prefer music made by

*He's done scary things
to timpani and trombones,
but Trimpin's talent is
gaining recognition. In
1997, he won a \$280,000
MacArthur Fellowship.*

humans," he tells me in an accent betraying his German birth. "I'm not interested in electronic sounds. The computer is only a tool, but the human body has limits—two hands, ten fingers, two lungs. I'm interested in using machines to go beyond what humans can do."

To demonstrate, Trimpin (who refuses to divulge his first name) walks to a laptop computer in one corner, taps a few keys, then hits <ENTER>. Suddenly his studio is filled with peals and clicks echoing from all corners in a gorgeous, syncopated rhythm. The sounds, made by chimes and drums wired to Trimpin's computer, swirl around me, resounding now here, now there. Trimpin doesn't so much as smile or nod. He's heard this one before. He spent weeks programming it, and a lifetime preparing.

As a boy, while other musicians were practicing scales in their bedrooms, Trimpin was learning music in the wild. He still remembers the day his father, an amateur on flugelhorn, took him into the woods to play. "I thought it was a silly idea," he says, "but the acoustics were overwhelming." Trimpin absorbed even more musical ambience during a ritual in his hometown near Germany's Black Forest. Each spring, town residents built a huge bonfire on a hill and heated small wooden disks with holes in them. When they launched the disks at the end of sticks into the air, the glowing wheels whistled like a choir. It sure beat playing in an

oom-pah-pah band, and the young Trimpin was hooked on "sound sculpture." After studying brass, woodwinds and electrical engineering, he began making his crazy-like-a-fox melodic machines.

IN 1987, HE FLOATED A HUNDRED Dutch wooden shoes in a stream outside Maastricht in the Netherlands. He set mallets inside each shoe and wired them to a computer. The shoes, jostled by the water, emitted a flow of glittering music, which Trimpin enhanced with a light-sensitive keyboard played by sun and shadow. He called the composition, appropriately, "Floating Klompen." Trimpin also tinkers on a smaller scale. He has rigged "bow-wheels" to violins, enabling them to be played continuously. He has played cymbals with bows and done scary things to timpani and trombones. But Trimpin's talent is gaining recognition. In 1997, he won a \$280,000 MacArthur Fellowship.

This month, the streets in downtown Miami will sing accompaniment to Trimpin's "MIAMI Klangflotte." The Klangflotte (German for "sound fleet") will feature six cycle-rickshaws equipped with drums, horns and other music makers. Riders will maneuver the rickshaws down converging streets at coordinated distances. The performance, while enjoyed by many, will inevitably raise the age-old question often asked about art. A rickshaw clanging along the street may be interesting, but is it music?

"Without music life would be a mistake," Nietzsche observed. But are wacky instruments more mistaken than musical? In a world of gangsta rap and grunge, judgments about music surrender to individual tastes. As to my own measure, I consider a performer's feel for an instrument. Anyone can play the whirly, a flexible

corrugated plastic tube that emits ethereal tones when whirled overhead. But how many will take the time to learn "Louie, Louie" on one? And who but Australian Sarah Hopkins can conduct an entire orchestra of whirlies? Hopkins' whirly orchestra looks like modern dance and

sounds haunting, like monks chanting in a cathedral. On the other hand, there's the Pneumaphone, a set of inflatable pillows hooked by hoses to wind instruments, like whoopee cushions putting on airs. Playing the Pneumaphone takes no feel at all. You sit on it. It toots. But if they laugh

when you sit down to play, take heart. In music, there's a grave danger in taking anything too seriously, as P.D.Q. Bach's fans know well.

According to "Professor" Peter Schickele (SMITHSONIAN, February 1990), Johann Sebastian Bach's last and least son, P.D.Q., played a heap

Trimpin hangs out with the horns in his Seattle studio. Behind him is his fantabulous Leonardo's Boom Box.



of “unusual instruments.” In comedic concerts presenting P.D.Q.’s compositions, such as “Concerto for Horn and Hardart” and “Pervertimento for Bagpipes, Bicycle, and Balloons,” Schickele plays the Double Reed Hookah in F, the Left-handed Sewer Flute, the Shower Hose in D and the Windbreaker. The latter is made of tuned mailing tubes, leading to its nickname, the “Mailing Tuba.” The name, Schickele notes in *The Definitive Biography of P.D.Q. Bach*, “does not . . . account for the instrument’s extremely unusual tone quality, about which the less said the better.”

C ALL ALL OF THIS MUSIC. CALL it madness. Either way, the orchestra must close its concert on a sour note. This swan song comes from the Pencilina. During one really boring summer when Bradford Reed was a New York teenager, some friends built a backyard fence. Reed, taking a stab at immortality, grabbed a fence post, added guitar hardware and stretched six guitar strings a few inches above it. He later put a second board beside the first and added four bass guitar strings. Between each set of strings, the inventor inserted drumsticks to move up and down the neck, sliding the notes somewhat like a bottleneck blues guitarist. Banging with sticks (at first pencils, hence “Pencilina”), bowing, plucking and ringing attached bells, Reed is the world’s only maestro of the Pencilina. “A lot of instrument builders are very scientific,” the wry, off-the-cuff Reed tells me when I visit him and the Pencilina in their Brooklyn loft. “I just wing it.”

Reed plays on Greenwich Village streets, in bands and on self-made CDs like *Bradford Reed: LIVE! At Home*. Though in refining the instrument he admits to becoming more and more methodical, as he stretches notes and thumps a bass drum with

Schickele’s comedic concerts feature the Double Reed Hookah in F, the Shower Hose in D and tuned mailing tubes nicknamed the “Mailing Tuba.”



Part of Leonardo’s Boom Box, a caricature of drag star Divine plays the sax.

his foot the Pencilina sounds like Jimi Hendrix and Buddy Rich playing “Dueling Banjos.” “When people ask me what kind of music it is, I say folk,” he tells me. “The Pencilina plays elements from every kind of music I’ve ever heard.”

Fear not, music lovers. Pencilinas are not about to take their place beside the bassoons. Joining the band is not the point of making your own instrument, explains Bart Hopkin. “Few musical inventors expect to make the next violin,” the experimental instrument guru tells me. “Many are musical sculptures, one of a kind. Their makers pursue individual sounds without expecting that

someday there will be a pool of players tuning them up in practice rooms.”

Whatever you call experimental instruments, they certainly make you hear things you’ve never heard before. Just as Romantic composers expressed the sounds of nature in their symphonies, the new instruments sound especially intriguing when they echo the world outside. That subway rumble? Doesn’t it sound like a Pencilina? That traffic jam? It may not be playing “New York, New York,” but it has a familiar honk to it. And pouring a glass of wine, I wet my finger and rub an homage to Ben Franklin and his glass harmonica. Bombarded by noise and clatter, some may yearn for the sounds of silence. Yet for those who keep their ears and minds open, there’s “music” everywhere. The sound of music, and the ability to hear it in the slightest sound, is embedded in us.

Avant-garde composer John Cage, notorious for adding unusual noises and even long silences to his compositions, once tried to experience total quiet. He sought out a soundproof chamber and seated himself inside. The doors were closed. At first, Cage heard nothing. Nothing at all. Then gradually he detected two sounds, one high, one low. The sounds continued until Cage left the chamber. An engineer told him that the high sound had come from his nervous system resolutely sending its signals. The low sound was his blood circulating. Sometimes the music *is* us. **■**

Bruce Watson plays guitar, and writes regularly for SMITHSONIAN on topics ranging from curling to Ferraris. Among other subjects, Theo Westenberger has photographed transgenic animals and tap dancers for these pages.

Smithsonian Web Link

To hear clips of this music and see some of the instruments in action, visit www.smithsonianmag.si.edu.