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Nadine Schütz, during a field recording with a parabola microphone at the Shisen-do temple. Her field recordings collect the spatial soundprint of the place: the sonic landscape.





DARIS MAY BE THE CITY OF LIGHT, but it of the sprawling city square as part of a residency is enveloped in sound. This is the cacophony of with the IRCAM (Institut de Recherche et de Coorstreets, clinking of street café silverware, the sand- dination Acoustique/Musique), a French research bagged thunk of a pétanque ball landing in gravel in center for acoustic technology and avant-garde a park, hiss of a night breeze through willow trees music founded by the composer Pierre Boulez. on an island in the Seine, water sloshing up the

signature of La Grande Arche de la Défense with a 32-channel hard-shell sphere microphone.

accoustics specialist, is doing this close analysis sounds like. She is using this understanding to

embankment and down again from passing boats. For its part, La Défense is a monumental Mitterrand-era space, the last anchor of Paris's axe Nadine Schütz knows the sounds of the French historique with a contemporary arch set within capital better than most. She is one of probably sight of a Richard Serra sculpture on one side, a very few people who have taken in the acoustic Hilton hotel in a vaulted concrete dome, a glasspaneled Catholic church, and a Joan Miró sculpture across a long rectangular plaza on the other. This is what it looks like. With each passing week, Schütz, a Swiss sound architect and landscape Schütz knows more intimately what its geometry

aid her collaborators at the French landscape architecture studio BASE (Bien Aménager Son Environnement/Build a Super Environment), which is planning a refresh of the open places at Défense.

Schütz has come to perceive spaces a little differ- of Zurich and later to Lucerne. She didn't like it ently from her peers engaged in landscape archi- much to begin with, but she became fascinated tecture: that the sound experience of the outdoors with the city's new concert hall, by Jean Nouvel, can be just as open to design and composition as and its summer festivals, where Boulez convened any other element. It's not easy to do, but possible. an academy of young musicians from around the

The landscape is an instrument, or more. It is a musician, she says.

The 35-year-old designer was born within earshot flute. "My mother took me to a special teacher of the largest waterfall in Europe, at Schaffhausen where you make your flute yourself. You have to in Switzerland. Her family moved first to a suburb choose your bamboo tube. You craft a mouthpiece.

LEFT

Schütz records and makes acoustic measurements of impulse responses at La Défense in Paris, with Clément Cerles, an engineer at IRCAM, a French research center for acoustic technology and avant-garde music.

BELOW

Impulse response tests and ambient recording in high-order ambisonics quality—basically, super-surround resolution—using a 32-channel Eigenmike.



world to play contemporary music.

By the time she was five years old, Schütz wanted to play an instrument. She started with a bamboo

CAMERA OBSCURA AUDITIVA – SECTION







the first hole. You start playing with a single hole to build and learn the flute. When her grandmothuntil you master the pieces that can be played er died, Schütz played the flute in memory of her. with a single hole. Then you have the right to Schütz also now plays violin and piano, and uses make the next one," she says. "It takes a year electronics to manipulate found and composed to construct your flute, learning hole by hole. sound. She says she likes to play instruments she the Polyterrasse of It gives you all of this physical understanding doesn't know how to play. She plays the theremin, ETH Zurich, with the of sound, how the different pitches are actually an instrument that is played without touching it, a institutions landscape happening. It is not just the mechanical thinking, kind of antenna responding to human gesture and architecture chair, how you have to behave to change the tone, but the related changes in electromagnetic frequency, why the tone is changing. You understand it at going quieter and quieter the closer you get to five years old."

You have to wait for it to dry. Then you can make Her mother as a girl had gone to this same teacher **ABOVE LEFT** touching it. Played on a modified, more mechani-

they create disturbance.

RIGHT

A sound field representation of sound pressure levels over distances at the planned court plaza project in the Batignolles section of Paris.

BELOW

Schütz visits the court plaza project with its architect, Hiroko Kusunoki of Moreau Kusunoki. Two of four lighting posts that will support sonic features are seen in the background.

OPPOSITE

Resonance testing of steel used in lighting posts.





Christophe Girot puts it a bit differently. "This is a whole domain present in landscape, and it is not researched at all. It is considered a nuisance. There is noise and there is silence, and nothing in between," he says. "But there are ways to modify the acoustic quality of a space and make it more pleasurable, more comfortable."

Schütz met Girot at the Swiss Federal Institute of Technology (ETH) in Zurich, where she studied architecture and urban landscape design. Girot is the chair of landscape architecture at the ETH. She first worked for him as a freelance exhibition designer. Their conversations led to collaboration on an exhibition launched in 2010, the Camera Obscura Auditiva.

Schütz used a directional parabolic microphone what she calls a "big ear"-mounted along with a rotating optical device to create an interactive black-box exhibition space atop a building terrace. The slowly rotating lens on the roof of the black box projected a camera obscura view of Zurich

on a screen set below. If the microphone picked up a lot of acoustic activity in a particular part of the exhibition space, prerecorded sounds from the city—which were synced to the rotating image, and directed to a speaker dome-would be reproduced more realistically above the screen. If an area was quieter, the composed sounds would become more abstract, spherical,

hardly recognizable from their source. "This pan- landscape configurations. She combined these orama made people aware that the city was not just with spatial studies to consider the effect of sound about noise, but, in a way, about sound," Girot says. in placing a listener in time, given factors such "Zurich has its own sound." as the cultural origin of a place and its contemporary use. One experiment led her to the Parco Schütz stayed on, producing a doctorate with Girot *dei Mostri* gardens commissioned in 1552 by Duke as her adviser and cofounding an audiovisual lab at Pier Francesco Orsini at Bomarzo north of Rome. ETH. Into the field she went for case studies, tak- "You have acoustic spaces overlaid there: the soft ing her spatial microphones and spectral analytics and scattered ambience of forest acoustics, and the to Shisen-dō temple garden in Kyoto, Japan; the strong reverberating sound emanating from the Parc des Buttes-Chaumont in Paris; and the Villa accessible Orcus monster mouth," she says. "There d'Este gardens at Tivoli, Italy. She experimented inside the mouth is a table cut from stone. You with different kinds of microphones and record- might imagine an impressive effect as Duke Orsini ing techniques to work out prototypes for sonic raises his voice and welcomes guests from inside."







SAINT-DENIS RAIL CROSSING



ABOVE

A view of the crossing site in Saint-Denis for a pedestrian bridge near a new Metro station on a site planned by the architects Kengo Kuma and Marc Mimram, overlaid by sonogram for study. Bottom numbers represent time; numbers on right represent Hertz.

popping microphones.

front of it. The project's planners became worried studio Emma Blanc, is still in progress; shaded

But forging sound-infused projects into the about the monotony of the plaza's acoustic environworld-especially in the hurly-burly of a place ment, surrounded by two glass-walled buildings like Paris—comes with its own more current and the highway, but also, in Paris's still deindusgremlins, above and beyond technical snarls and trializing periphery, wanted to connect it with the emerging network of nearby urban public spaces.

Cutting through neighborhoods and circling Paris "My idea is to create an acoustic theater using the is its notorious beltway, the eight-lane Boulevard lighting poles," Schütz says. She took recordings *Périphérique.* As the beltway moves through Porte on the site and in the immediate neighborhood to de Clichy, two sleek buildings are rising above it: get a sense of the impact of the building physics the large new Renzo Piano-designed Tribunal de on the surroundings and to use as compositional Grande Instance de Paris courthouse and legal material. The plaza, designed by the architects complex, with a forecourt plaza taking shape in Moreau Kusunoki and the landscape architecture

RIGHT

Audibility projections of sound layers projected by planned structural "instruments" that will resonate on the new pedestrian path. Elements of the crossing will make different sounds and impressions, and are here projected in rain, sun, and wind.

granite is laid out in a pattern, with two islands emerging alongside seating space under sequoia, ash, elm, maple, and pine canopy. Several tall and slender lampposts are set in place, four of them with space inside for suspension and wiring of speakers. The posts create an imaginary parallelogram that includes the building entrance, metro station, and the islands closer to the street.

Schütz aims to use that space as a kind of buffer zone to the street and to introduce small, subtle sound interventions: pipes in the poles will relay sounds sampled from adjacent neighborhoods, recomposed into more abstract sonic landscapes. At the top of the poles closest to the buildings are mobile metal elements that will move in the wind, like the cables on sailboats in the harbor, a sound transported to pedestrian level by contact microphones. Together it should create an acoustic foreground, a layer between the traffic, plaza islands, and building facades bounding the square.

Currently the installation work is held up waiting for a long-promised permitting letter from the Paris city hall. Schütz is a little worried about it. Mounting the equipment should not take too long, but if the plaza construction works finish before that happens, it means extra security and installation on site for the sonic elements. That could pile up expenses.

These kinds of peripheral costs are a hazard in any emerging field. Outside of concert houses and studios, project managers are unaccustomed to

SAINT-DENIS RAIL CROSSING AUDIBILITY PROJECTIONS



SOUNDS PRESENT DURING A YEAR. SUNNY CONDITIONS 30 j 25 j 20 j 15 j 10 j 5 j 0 i Avr Mai Jan Fév Mar Iun Iul Aoû Sep Oct Nov Déc SOUNDS PRESENT DURING A YEAR, WINDY CONDITIONS. 30 j 25 j 20 j 15 j 10 i 5 j

Fév Mar Avr Mai Jun Jul

0 i

Aoû Sep Oct Nov Déc

OPPOSITE

Sonograms show spectral simulation of Pleyel crossing site in wind, sun, and rain. These images are based on superimposing a short clip of a site recording (two minutes, 50 seconds) including a passing train, with the sounds of elementary instruments.

BELOW

The site of the planned crossing at Saint-Denis.



planning around acoustic elements. It is just the sort of item a client abandons: A court complex is a place where busy people have to be anyway, so why bother? In this case, the next few months at the Tribunal will be indicative of the city's intention.

For her part, Schütz says in France, and not only in France, she is seeing growing consciousness about the importance of auditory qualities in built environments, interest in working with surface geometry, and understanding acoustics so as to have an auditory impact on space, in urban con-texts, and also farther afield.

It is what brought BASE to her. Schütz is using IRCAM's processing capabilities and top-notch studios near the Centre Pompidou to analyze impulse responses taken with an ambisonic Eigen-mike, which takes in the entire sphere of sound around it. An Eigenmike looks like a gleaming, expensive wiffle ball.







SAINT-DENIS

SONIC LANDSCAPE IN A BANLIEUE : TRAPPES-EN-YVELINES



Sonic structures

there will be shade umbrellas in the garden and water elements. Willemin says small hidden Garth Paine, an Australian composer who codithrough vibrations," he says.

chitect Marc Mimram to integrate sonic landscaping in the engineering work that underpins the sounds the composer associates with bubbling and design of a planned 300-meter (985 feet) bridge photosynthesis. Passersby could not tell where the spanning a railway junction in Saint-Denis. The sounds were coming from. They started listening idea is that elements of the bridge itself can bring much more carefully. Paine got to know Schütz at new acoustic dimensions to this kind of space—a IRCAM during his recent residency there, and they place in which to pause, and not only pass—in share an interest in what could be called guided listime for the Paris Olympics in 2024. Schütz's tening. "You're introducing sound not just to have work is further included in an ongoing bid for a sounding object in space, but to direct people's a public housing project at Trappes-en-Yvelines, attention to listening," he says. "You can guide their one of the tough banlieues north of the city.

Considering acoustics in outdoor settings, as Girot points out, is mostly confined these days to suppressing sharp noises, putting up baffling walls. It SCIENCE AND IS BASED IN BERLIN. HE IS THE AUTHOR AND has a richer recent tradition in acoustic ecology, as pioneered by the composer and environmentalist

Clément Willemin, one of the BASE studio part-R. Murray Schafer; or in the interventions made for ners, says they'll use Schütz's work to lend consis- war, as in early British coastal warning systems, or tency to one of four new gardens that defines the contemplation, as with a student project under the remade square. Willemin says this will include Estonian interior architect Hannes Praks that put grounding materials, furniture, and lighting; oversized megaphones in the woods for listening.

speakers will feature in the design. "It's possible rects the Acoustic Ecology Lab at Arizona State the sound will travel through the umbrella. You University, says there's much more to explore. can actually have metal sheets producing sound Paine once created small floating planted pods for the Royal Botanical Garden lake in Melbourne with microweather stations set into them. They Schütz is also being brought in by the French ar- generated sounds that were based on the local weather conditions and set at an ambient levellistening to actually understand the environment more deeply than they would otherwise." •

> EDITOR OF WOODS AND THE SEA: ESTONIAN DESIGN AND THE VIRTUAL FRONTIER.

ABOVE

A section of a new housing development planned for a suburb of Paris showing Schütz's ideas for sound. Plans for the project are still in the competition phase.

OPPOSITE

Field recording set-up at Shisen-do in Kyoto, with a microphone array taking in environmentaland source-based spatial impressions.



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0:20

0:30

0:40

