

RAIN
DELAY

Creating Sound For *When The Rain Stops Falling* At Lincoln Center Theatre

BY FITZ PATTON

PHOTO: T. CHARLES ERICKSON



Have you ever listened to the slow, rhythmic tapping of a few drops of water on your window sill and wondered how that simple sound might be related to the ferocious noise of a torrential downpour? Is it simply a matter of more? Is the furious panic of a body-bending deluge of biblical proportions related to that soothing three-against-two polyrhythm beating against your window on a rainy summer afternoon? Could a rainstorm simply be a super-dense proliferation of little rhythmic streams quickened in pace and volume? And what would we have to do to find these answers anyway?

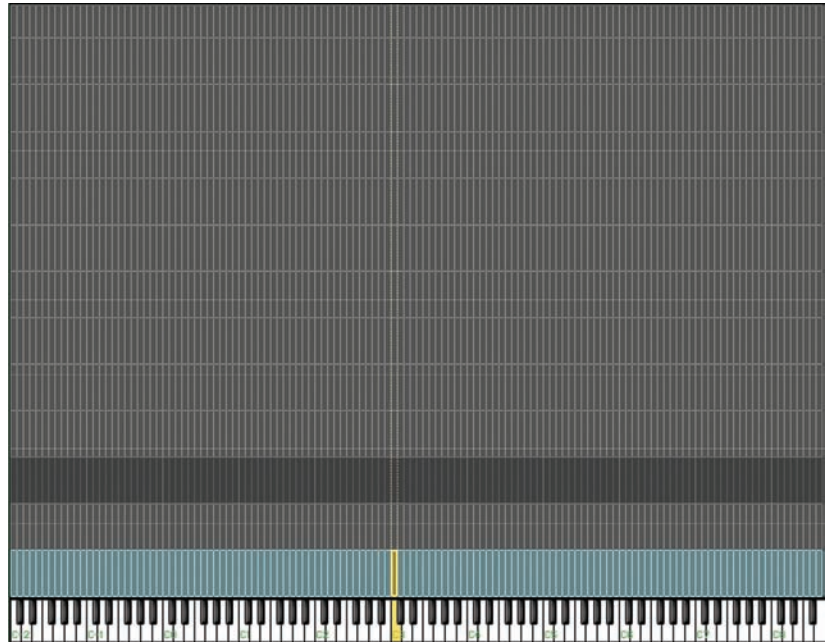
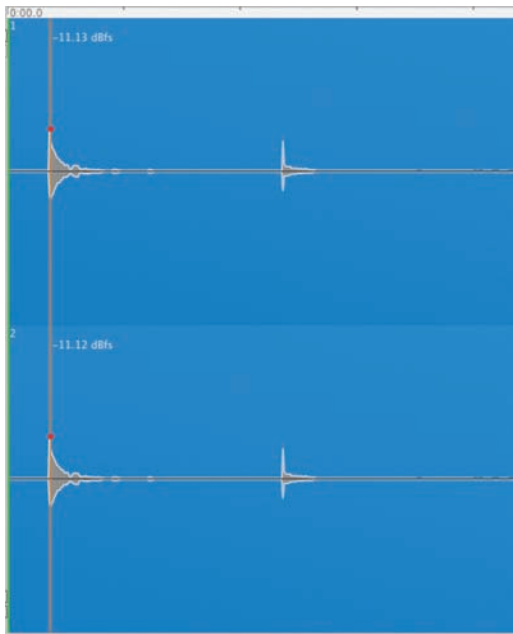
The first day we sat down as a team to talk about *When the Rain Stops Falling*, director David Cromer began by playing a sound. Actually, it was a video, sent to him by a relative or friend, I think, of a choir that opened this concert by recreating a storm with their fingers (snaps become raindrops) and hands (bigger drops) and jumping feet (thunder claps using the risers as a drum). And so, this idea emerged of the individual drop and the individual ear, that all the members of the audience should first hear a drop, hear it specifically in their own way, and then another, and another, and that we might be able to bring them inside the storm, one drop at a time.

I took the idea at the meeting and suggested we give every member of the audience a personal relationship to the sound—a close, individual experience. We could bring them into the play by first placing them within the endless storm. Then, when we see older Elizabeth on stage in Scene III, we know what the rain feels like



PHOTO: T. CHARLES ERICKSON

» The sound of continuous rainfall accompanies *When The Rain Stops Falling*.



» **ABOVE:** A drop into water and its little backplash.

» **ABOVE RIGHT:** A keyboard with 1,280 drops into water.

We give every member of the audience a personal relationship to the sound.

to her because we know what it feels like to us. So, logically, it followed that our storm must be made one drop at a time.

For me, this discussion was also taking place in the context of my recent investigations into the work of Bernhard Leitner. Leitner proposed the possibility that sound could define space—architectural space—and developed multiple-channel systems to express his idea that a sound that moves through physical space creates a psychoacoustic space. The unity of sound, space, and time is revealed when sound moves through space, defining and then redefining our perception of space over time. We become aware of the performance space as a psychoacoustic space, and architectural volume as an expansive and expressive dimension.

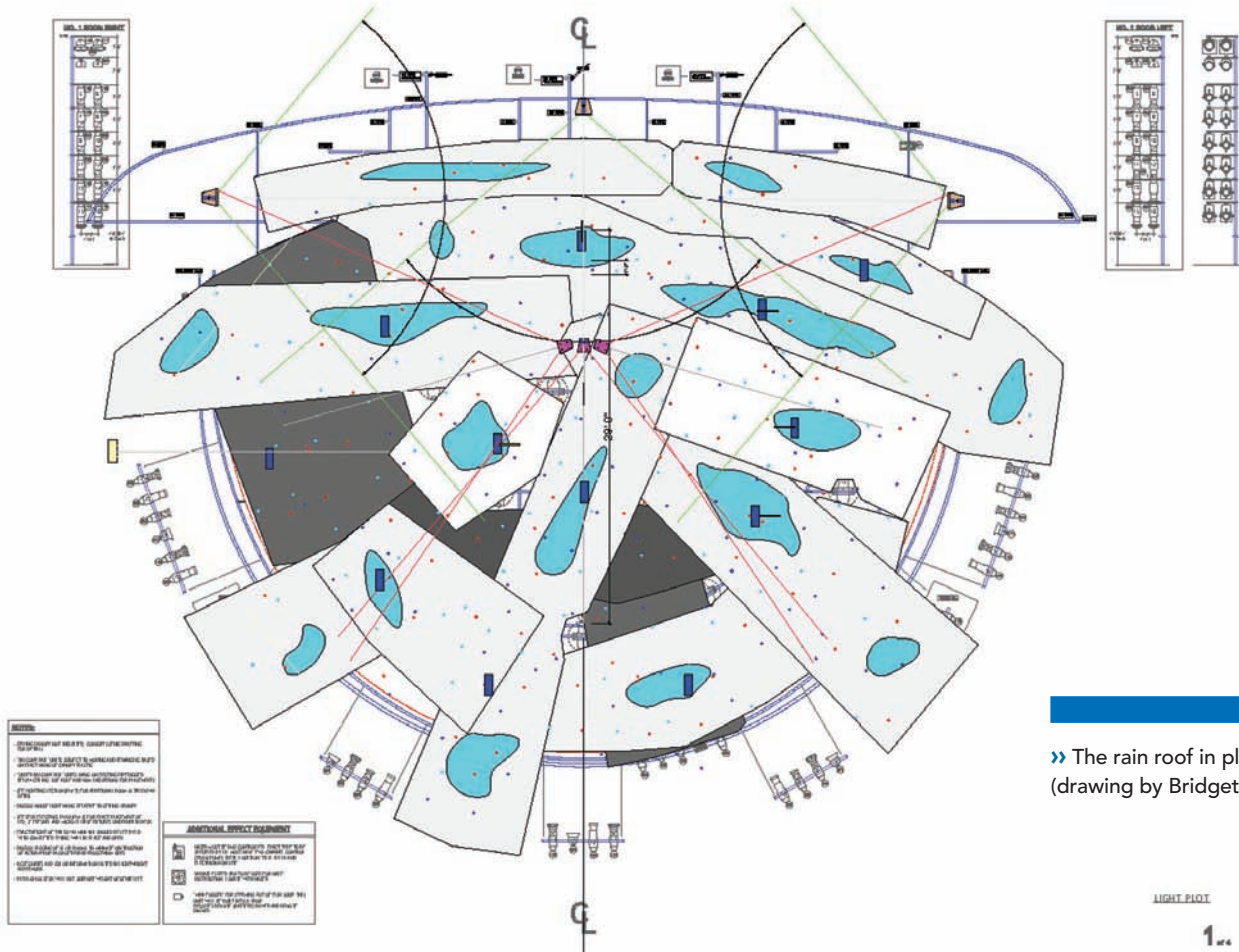
Other players in this dialogue were Douglas Kahn, who wrote so beautifully about the musical quality of rain in *Noise Water Meat: A History of Sound in the Arts* (MIT Press, 1999), and Rem Koolhaas, whose seminal work, *Delirious New York* (Monacelli Press, 1997), makes clear that New York City is virtual reality and that theatre, as an expression of this

provincial obsession, must aspire to absolute transport, via the creation of virtual space—the creation of a perfect replacement of sensory space. Theatre is live, time-shifted, virtual reality. In the case of weather, the emphasis is on reality.

The composer, Josh Schmidt, and I made a few critical determinations in beginning this project. The music would be folded into the sound/space in such a way that emphasized integration. The music would not be perceived as a separate artistic discipline but would naturally extend from the unified sound/space. To achieve this, we decided that the tempo of the rain drops and the music would center on 60 and 120 beats per minute. Secondly, Josh would provide the score as a collection of coordinated, but discrete, elements that I could work with both as sound, musical sound, and pure music. Lastly, the music could be processed, as was the rain, with beat-based acoustic spatialization that would establish a dialogue and comity between the sound and music worlds, rendering the boundary between them to be indistinct, at best.

To begin, we needed water drops, a way to

DRAWING BY BRIDGET O'CONNOR



» The rain roof in plan view (drawing by Bridget O'Connor).

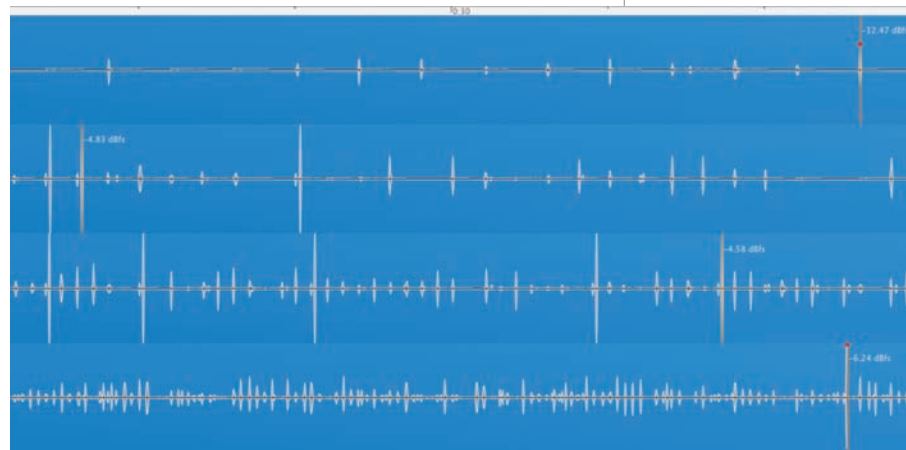
stream and control them, to fan those streams out across the ceiling of the theatre, and then to accelerate the tempi of the streams from a few insignificant drops per minute to several hundreds. And finally, we'd need two kinds of water, water falling onto dry things and water falling into water. As the storm progressed, we would move gradually from one to the other.

So, to begin, I recorded the drops—2,560 of them. I loaded these drops into a keyboard and programmed a computer to play the drop recordings randomly but in a controlled rhythm and tempo. So, each stream of water presented an endlessly random and fresh flow of water drops but in a stable rhythm and tempo that I was able to control.

I made rhythmic groups of water streams. One example presented this simple combination of drops:

Channel 1	Channel 2	Channel 3	Channel 4
●	♪	♪	♪

And the quad recording of this rhythm looks like this:



We made a quad-channel sound file for this and many other rhythmic groups—the same note values, but in triplets of 3 against 2, 4 against 3, 5 against 4, and more. We then deployed these sound files across the theatre space through the system we called “the rain roof.”

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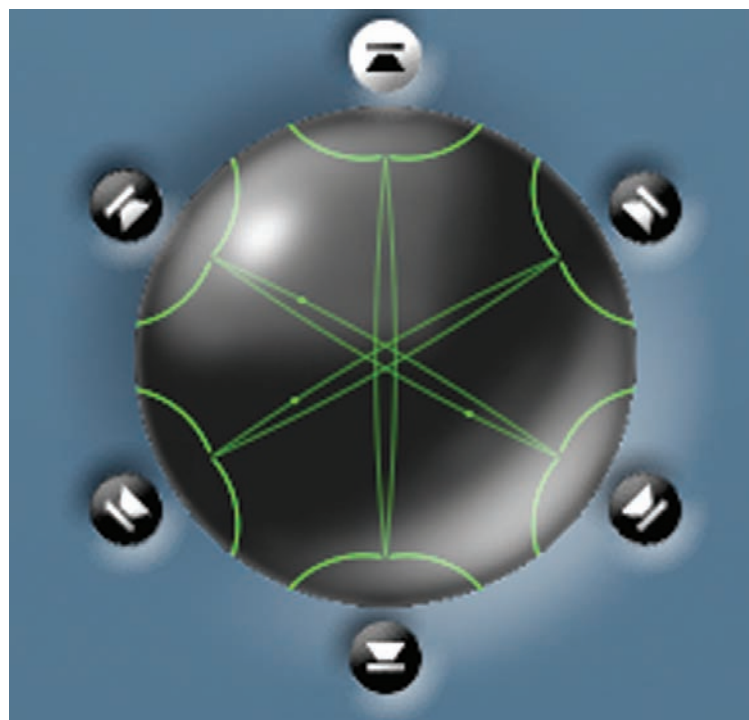
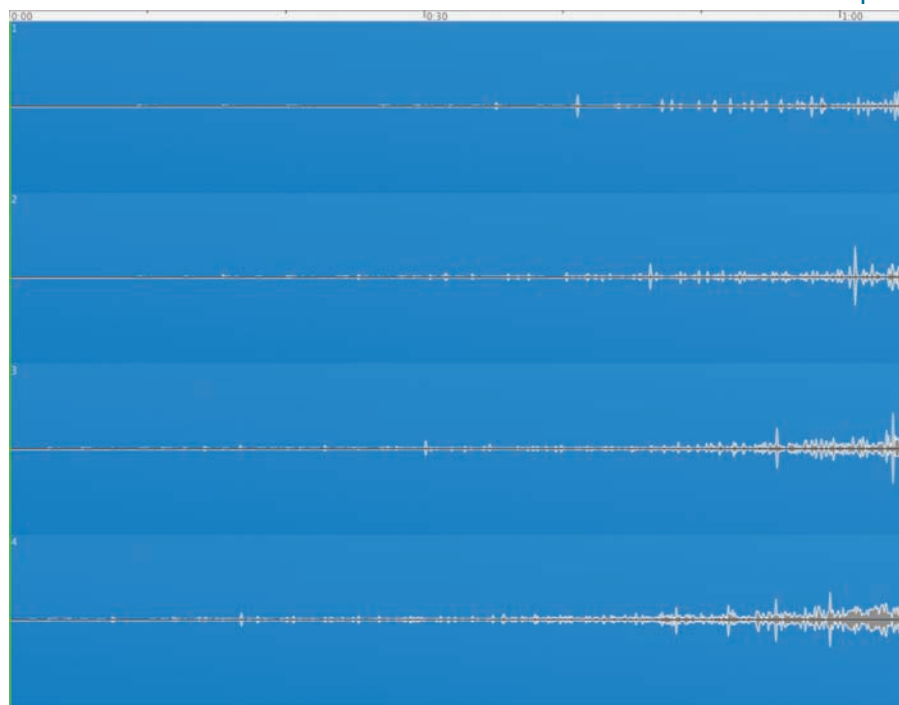
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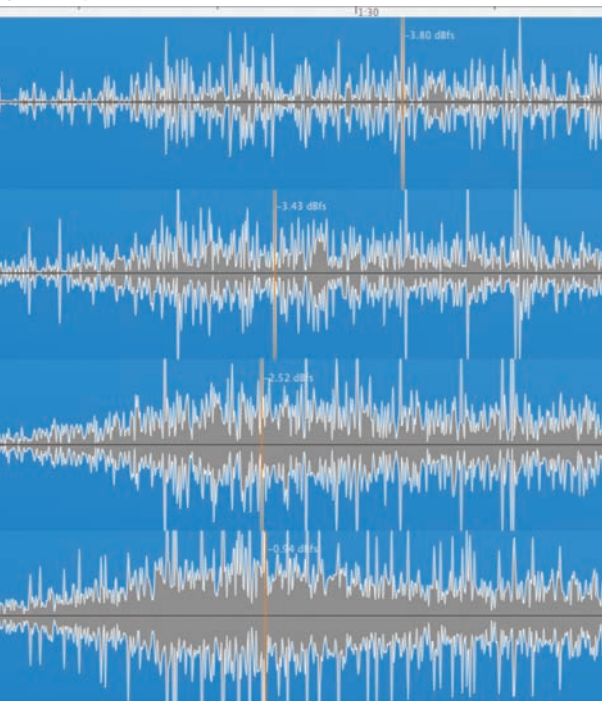
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» **TOP:** The same rhythmic group driven by a tempo shift to nearly 400 times the speed/density.

» **ABOVE:** A 6-channel delay: drops traverse the space and bounce.

» **TOP RIGHT:** A scene from *When The Rain Stops Falling*



The rain roof was a group of 14 speakers (implemented by Bridget O'Connor and Mo Smolenski) over the audience—12 Meyer Sound UPM-1P speakers and two Meyer USW-1P subwoofers driven in three quad-channel zones. We played our rain streams through the roof—three at any given time—for a total of 12 streams, in both water-on-plastic and water-into-water varieties, creating a dense rhythmic web that we could control, drop by drop. The storm began with a single drop at a tempo of 1/16th note = 20, accelerating over the span of two minutes to 1/2 note = 400.

We added thunder and a recording of rain on pavement in the stage-level systems. The results were fascinating. We discovered that my sequence of drops, each discretely played within its rhythm, did indeed sound like a natural torrent when accelerated and that the sound of a storm is truly, nothing more than the gentle sound of a single, rhythmic drip driven at tremendous densities of speed and volume.



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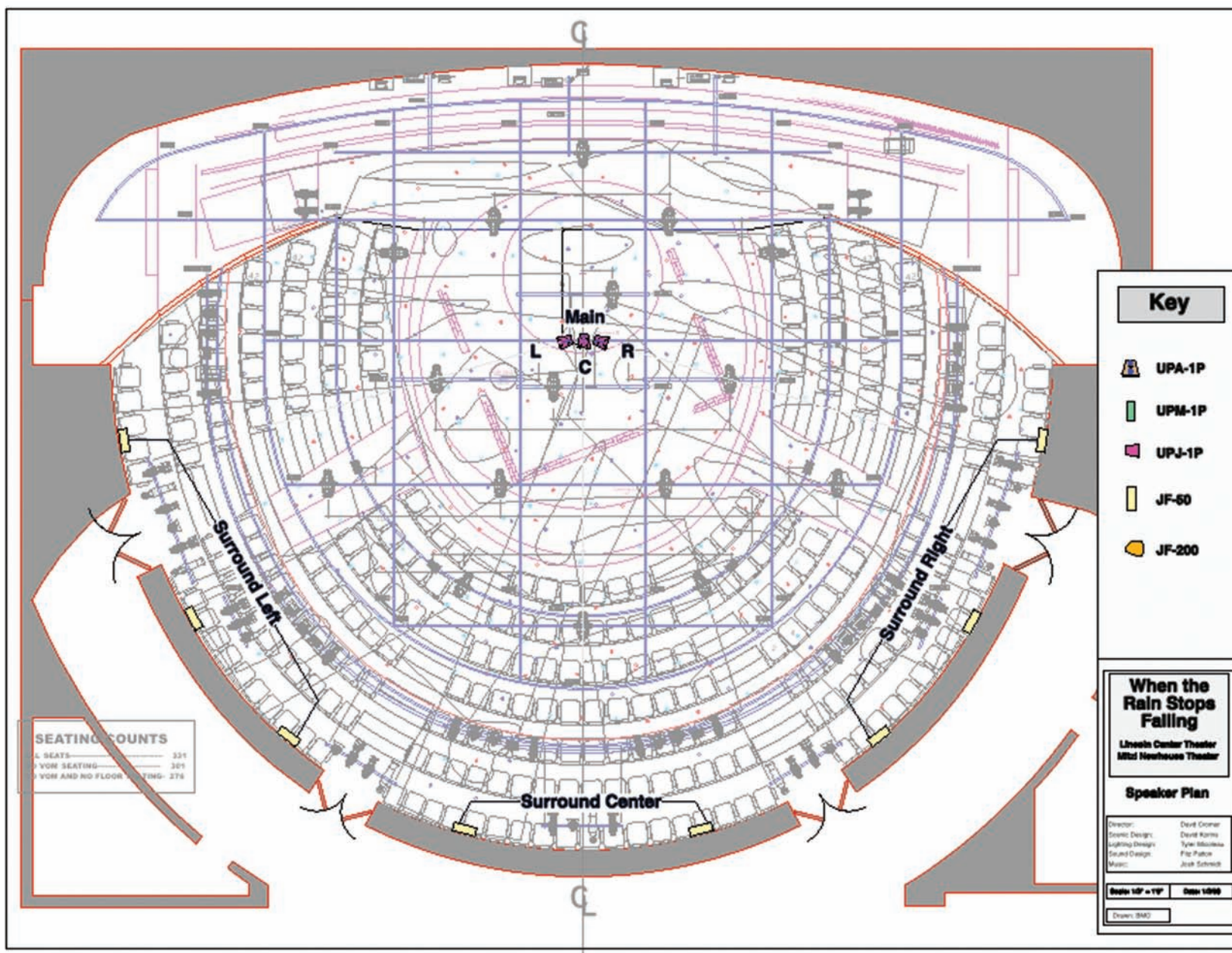
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» The 6-channel surround setup, with upstage subwoofer system.

But there's more. As an additional psychoacoustic layer, I designed one more component. In addition to the rain roof (12 Meyer UPM-1Ps and two Meyer USWs) and stage-level system (three Meyer UPA-1Ps upstage left, right, and center, an EAW JF200 in each vomitorium, and a wireless speaker in the table on stage), we installed a time-aligned 6.1 surround sound system. This was a 6-channel ring of speakers, evenly spaced around the audience, that fired sound across the space. For this system, I designed a 6-channel sound/space that would take a rhythmic stream of water and wash it across the audience in patterns that traversed the physical space of the theatre. If you

heard this sound by itself, you would hear a single drop of water bounce from speaker to speaker, across the space, like a Superball in a racquetball court, and each time it bounced, it would create a little echo of itself at the bounce point.

As the storm approached its greatest density, I subtly blended a 6-channel sound file into the 6.1 surround system, made up of six EAW JF60s (two each for the LCR surround zones), three Meyer UPA-2Ps (LC Right), and two more Meyer USW-1P subwoofers.

We blended the 6.1 system across the rain roof downpour, just as it reached its peak density, lift-

PHOTO: T. CHARLES ERICKSON



» The blended 6.1 system had the effect of lifting the entire storm into a state of elegant madness.

ing the entire storm into a state of elegant madness. You couldn't hear it specifically within the density of sound proliferating in the space, but it gave the sensation that the

whole storm had begun to swim. The design became compelling, not only because it immersed the audience in a highly random and evolving deluge of water of epic pro-

portions, but because it gave us an opportunity to examine the anatomy of the sonic quality of rain through its controlled recreation, drop by relentless drop. **LD**

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