The Sound Recordist as Composer: Aesthetic and Practical Concerns

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Abstract
Composers of electro-acoustic music have long relied on field recording to capture source materials for processing and mixing, incorporating these into their compositions and sound-design libraries. Recent technological advances in high-quality, multichannel field recording have afforded unprecedented opportunity to capture surround audio content in high definition. In this paper, we discuss a recent experience in field recording, incorporating a discussion of aesthetic and practical issues afforded by these new technologies.

1 Introduction
This paper documents a residency in Cheraw, South Carolina in which natural sounds were recorded with the intent to create a sound-design library and an extended-length multichannel composition. The composition is not simply a response to the environment, but is composed in some ways by the park itself through the use of extended-length environmental sounds. This sonic snapshot reflects the majesty, vastness, and natural beauty of the region, much as other natural field-recording works have attempted from a variety of disciplines (e.g., Boyce and Goldhor 1994; Klein 1998).

A town of approximately 6000, Cheraw lies in the Olde English District of South Carolina. The town is the birthplace of Dizzy Gillespie and features some 50 Antebellum buildings, as well as a number of Victorian and Revival structures in and around the downtown.

Cheraw State Park, developed by the Civilian Conservation Corps as part of President Franklin Roosevelt’s New Deal Program, represents the oldest park in the South Carolina State Park system. A number of buildings from the 1930s are still in use, and electricity outside of the camp office, recreation center, and cabins was unavailable. Therefore, issues of power and portability were of the highest concern for us during our stay.

Cheraw State Park is home to one of the last remaining groups of Red-Cockaded Woodpeckers (RCW). In a 2000 census, the US Fish and Wildlife Service estimated that there were approximately 12,500 birds still living in the wild. These woodpeckers live in clusters grouped around very old longleaf or loblolly pine trees. The RCW is most active in January and February, its mating season. Our residency took place in August 2005, when many of the birds had migrated north for the summer. However, we still hoped to find the few remaining birds and preserve the sounds for our composition, which we were fortunately able to record.

We were given complete access to the park’s 360-acre Lake Juniper by canoe, kayak, and various walking trails and bridges (Figure 1). This allowed us to record a range of water, animal, and occasionally human sounds associated with the lake.

Figure 1. View across Lake Juniper.
2 The Natural Model

Before arriving in South Carolina, we spent many hours debating the primary aesthetic approach we should employ when recording. Because the resulting composition would be comprised of relatively unprocessed field recordings, the aesthetic approach taken while capturing natural sounds formed a significant portion of the compositional activity proper.

We considered two antipodal aesthetic approaches to field recording, which we term the natural model and the interpreted model. (See Figure 2.) Similar concepts in photography have been used as well, in which the corresponding concepts such as candid photography as distinct from portraiture may be applied. At their core, these terms denote extreme approaches to capturing a scene (whether aural, visual, or both) by differentiating the relative involvement of the recordist.

Recording according to the natural model refers to the concept of recording as if one were not present. The goal here is to transduce a physical sound source (or sources) directly into audio sound files while minimizing as much as possible the involvement—and even point of view—of the sound recordist. Corollary to this model is the elimination of editing; elements that may be deemed “undesirable” in retrospect must be left for the sake of accuracy of sonic documentation. This ideal reflects a philosophical and practically unattainable ideal: to capture the sound of a tree falling when no one is present to hear (or record) it!

We were fortunate that our residency took place in August, after the high tourist season. School had started, and the only time we did not have the park entirely to ourselves was on Friday, Saturday, and Sunday when the golfers arrived. One misfortune was that the septic tank in the cabin next to ours malfunctioned, and workers were there for several days with backhoes, jackhammers, and the like to fix the problem. Additionally, South Carolina is very warm during the month of August, and air conditioning units were run very frequently. Cheraw lies on a major truck and train route to North Carolina. So one of our main aesthetic concerns was whether or not to include the extraneous noises made by people, trucks, trains, and construction equipment.

Owing to the underlying human intrusion associated with recording in and around the cabin and living areas of the park, we determined that it was much more feasible to set up the recording equipment in remote park locations and let everything run for three or more hours at a time.

3 The Interpreted Model

Recording according to the interpreted model refers to sound collection that overtly and intentionally reflects a particular aesthetic goal or bias. As shown in Figure 2, this model affords interpretive bias for the recordist, sound designer, and composer via modification (through staging and/or actual sound altering). Furthermore, the point of view of the recordist is no longer masked; it becomes a central feature of the recorded sound.

Note that two distinct types of modification are allowed in the interpreted model. The first type can potentially occur before actual sound transduction (recording) via physical alteration of the sound source. This kind of modification can take several practical forms: acoustical alteration of the sound source (e.g., removing the sound source from its natural environment for later recording in a studio), layering of events that were not simultaneous, or even adding various kinds of effects such as artificial reverberation. The second type of modification can occur after the sound source has been recorded. This reflects perhaps the most common kind of sound modification, in which recorded sounds can be “cleaned” (e.g., via noise
reduction or DC offset removal), or even simply edited via “cut and paste” operations. In particular, elements in the recording deemed “undesirable” by the recordist and/or composer can be removed at will.

By the completion of our residency, we had acquired over 50 hours of multichannel HD recordings (24 bit word length at 48 and 96 kHz sample rate), some of which we had heard in our makeshift project studio in the cabin, but much of which we had not yet auditioned. By setting up the equipment and leaving for several hours at a time, we were able to capture many more natural sounds and avoid our own impatient interruptions.

Returning to the studio to categorize and edit the week’s recordings, we discovered many unique sounds, including various bug patterns, birdcalls, and wind and water sounds. We found that even though we left our equipment for hours at a time during the morning, afternoon, and evening hours, our most interesting material was captured between midnight to 6:00 am, while the human population slept. We found ourselves recording for this reason according to the natural model in the midnight-to-morning time frame, because the sheer majesty of the raw, unedited sound was fantastic, particularly when listening in a surround-playback setting. As a result of increased human activity during the daytime hours, we naturally recorded in the daytime hours more according to the interpreted model to minimize the intrusions of human and mechanical sounds.

Our goal was a 24-minute composition, with each minute representing one hour in a 24-hour period. All material was already divided by day of week. As categorizing and editing began, we divided the material into four large time-frames: morning (6:00 am to noon), afternoon (noon to 6:00 pm), dusk (6:00 pm to midnight), and night (midnight to 6:00 am). To this extent, a post-production adaptation of the natural model is reflected in our final composition. Now the process of editing began—cutting, copying, and shaving down each portion to approximately eight minutes so that the four sections could be overlapped and combined with one another to create a sonic snapshot of one day in the park. This aspect of our composition reflects a post-production adaptation of the interpreted model.

4 Practical Concerns

The prospect of high-quality, multichannel field recording necessitates a number of important practical considerations and a high degree of organization prior to recording. The most important considerations here are the recording medium, microphone types and arrangements, and power.

4.1 Recording Options

Documentation of acoustic ecology has generally been restricted over the past two decades by limited funds and technical assistance, and so most recording equipment and methods employed have been modest. Field recording activities for composers have also been predominantly limited to the technology of the portable Digital Audio Tape (DAT) recorder, which generally allowed only 16-bit two-channel recording at a sampling rate of either 44.1 kHz or 48 kHz. Recent technological advances have enabled cost-effective, high-definition (HD) multichannel recording for extended durations. Previous field-recording equipment, limited by the relatively short recording capacities of magnetic tape and compact discs, have only been able to capture up to approximately two hours of two-channel audio. Current laptop-based recording systems are limited only by hard disk capacity and can record for many hours uninterrupted.

Three options are currently available for multichannel HD recording in the field: (1) recording to multiple two-channel HD portable field recorders that are slaved together via timecode; (2) recording to laptop via a portable audio interface; and (3) recording to a multichannel HD field recorder. These three options are ordered here by increasing investment, although it should be noted that multichannel HD field recorders can be rented.

4.2 Microphone Arrangements

While classical microphone recording arrangements can be used in field-recording situations, portability and ease of setup become increasingly important when recording on location. Furthermore, the requirement to record in surround can limit the number of available arrangements to expensive, commercial off-the-shelf rigs, or larger, bulky custom rigs. (For recent work in this area, see for example Thiele 2001; Wuttke 2001; Fox and McGregor 2005). Although portability may seem a trivial issue that can easily be addressed, we often lamented the lack of portability with some of our microphone rigs while hiking and canoeing, particularly upon hearing a fascinating but short-lived sound event.

While the prospect of recording audio information in multichannel surround adds a layer of complexity to the required microphone
arrangements, it perhaps more significantly places limitations upon the portability requirement. While SoundField microphones are appealing here owing to their single-capsule nature (and because they thereby lend themselves to handheld pistol-grip operation), their high cost may limit their usefulness in budget-conscious field recording.

Mid-side (M/S) recording techniques are well known in the recording industry and are widely regarded for their variable spatial imaging upon decoding (Dooley and Streicher 1982). Coupled with the availability of single-capsule M/S-arrangement microphones and the growing literature on extensions to surround-recording operation (e.g., Schoeps 2001), the so-called Double-M/S recording arrangement is particularly well suited to portable multichannel field recording of surround audio content. Using single-capsule M/S microphones, such as the Sony ECM-MS5, a simple and relatively cost-effective surround recording array can be easily manufactured and mounted on a single, portable microphone stand or a handheld pistol-style grip.

We used the array shown in Figure 3 for many surround-field recordings in Cheraw. The use of wind screens and shock mounts on each M/S microphone capsule further isolated the recorded sound from wind, light rain, and low-frequency rumble.

4.3 Power and Other Issues

The readily available power sources for all recording equipment is required for all field recording gear, yet this seemingly simple requirement represents perhaps the largest challenge. Batteries are heavy and drain rapidly, particularly when recording directly to laptop. Newer technologies for portable power, such as hydrogen fuel-cell supplies, have recently become available, but they remain prohibitively expensive for most. We are considering using high-capacity automotive and marine batteries coupled with a power inverter for future field work.

5 The Natural Field Recording Commandments

During our most recent field-recording project, we kept notes reflecting lessons learned during the process. In hindsight, all of these may seem overwhelmingly obvious, but they are nevertheless worth compiling into one place for future reference. We hope they are useful for others as well!

2. Portability is also everything. Smaller is better.
3. Bring an adequate toolkit, and don’t pack lightly. It should contain a soldering iron, extra cable, a variety of connectors, extra batteries, gaff tape, screwdrivers, a hammer, and flashlights. And more batteries.
4. Watch the weather!
5. Backup offsite routinely.
6. Record according to the desired model.
7. Bring users manuals for all equipment if possible.

6 Future Work

This project taught us many important lessons about multichannel field recording. In the future, we would like to incorporate technology from the music information retrieval (MIR) community to assist in the classification of accumulated recordings. We would also like to experiment with custom multichannel recording rigs that allow simultaneous capture of surround audio content in the field according to a variety of techniques.

Figure 3. Our custom Double-M/S recording rig in a mature pine forest.

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7 Acknowledgments

We gratefully acknowledge the State of South Carolina and the South Carolina Park System for their support of this work, and especially Ms. Rhonda Griffith, Administrative Specialist for Cheraw State Park. We also wish to thank the University of Miami and Florida International University for their support.

References


