

WHERE TO START?

This article is intended for players who have little experience with electronics, and want to incorporate some pieces into their existing repertoire. The repertoire list on the last page will be useful to more experienced players. This information is geared to the conservatory level student, or higher, with a solid foundation of basic technical instrumental skills and ensemble playing.

General advise: Play a 'tape piece' first, then go on to a live electronic piece, which is more complicated. See repertoire suggestions at end of this article.

TAPE VS. LIVE-ELECTRONICS

"Tape" pieces are pieces with a fixed, recorded electronic soundtrack accompaniment. They are usually played off a CD with a CD player these days.

"Electronics" pieces usually involve a computer that may be either playing fixed electronics or live-electronics. Either way the sound is coming out of the computer. In fixed electronics pieces, you may trigger samples or blocks of sound (with a foot pedal, for example, or the computer program may have a pitch follower built in). In a live-electronics piece, the sound of clarinet goes into a microphone where an audio interface turns it into a digital signal; that signal is sent into the computer to be processed ("live processing"). In this case you must have an **audio interface** and a **microphone** (see below).

You *can* play acoustically with these works, but being lightly **amplified** is often a good idea. Either way, make sure that the level of the sound allows for you to be heard in the hall.

If you are not standing in front of the speakers, you should have a **monitor speaker** so you can hear clearly yourself.

A **stopwatch** is a useful tool if the piece has a timeline written on it.

TECHNICAL SUPPORT

If you are starting this adventure for the very, very first time, find a buddy, teacher or composer who will help you out. It is so much easier to put these things together with someone who has done it before. Try to use the resources at an institution that already has equipment for your first forays.

PREPARATION TIME LINE

You should expect that it will take at least ten hours, spread out over time, to select equipment (microphones, etc), set up equipment (route cables, test sound, get everything connected, make sure software is compatible) and rehearse. This is for a live-electronic set up, not a tape piece. It may seem like a lot of time—but just think of how long it took you to get used to playing with piano at first!

It is a horrible feeling to be pressed for time regarding sound and set up. Do everything ahead of time, practice as much as possible with the set-up. Have someone there to listen for balance and give you feedback.

Make a check-list for all the equipment you need. Make a drawing of your set-up.

PRACTICE TECHNIQUES

Approach the electronic score almost the same way you would approach the accompaniment of any other piece. Learn the major shapes of phrases by ear, not only counting; practice phrase by phrase with the electronics.

I recommend the following practice techniques:

- Listen to the electronics/tape part numerous times without playing.
- Listen with and without the score.
- Listen and use a stopwatch if the piece has a time line (this is the case for many pieces with a fixed soundtrack).
- If there are very fast passages ask the composer to make a track for you at 1/2 or 2/3 speed for study purposes.
- Practice with a metronome /click track for pieces that are metrical.
- Have a remote control for the stereo or computer so you can easily rewind to rehearse small sections.

EQUIPMENT

If you study at a university or conservatory, use the equipment there to see how you like performing with electronics. That way you will know if it's something you'd like to pursue before you invest a lot of money. Over time, if you want to perform a lot, buy your own equipment and build your own set-up. The advantage is that you know how it works, and it minimizes the chance for problems. It's like playing on your 'own instrument' instead of using whatever the rental shop has laying around.

Here are the basic components you will need:

General

A PA system will be needed. At minimum a high quality stereo system to play a CD; or for electronics and amplification a mixer will be needed for you to connect to the speakers.

*Make sure you have grounded power, otherwise you may get a hum that builds up in the sound system.

**Make sure you have all the adaptors, cables, pedals, mic stands and clips you need.

***Always confirm the set-up –twice-- in writing and verbally, with whomever is helping you.

Computer

Buy as fast a processor as you can afford. I use a laptop, which is great for portability (a Mac PowerBook G4). I have always used Mac, though PCs are supposed to work equally as well for music applications these days.

Software

The composer will write some kind of program, usually in existing software, that manipulates the sound, and/or contains blocks of pre-existing electronic sound material. These sounds and or the program that manipulates and processes live sound is called a **patch**.

You don't have to buy a lot of expensive software yourself. When the composer delivers his/her piece to you, the patch is built in a way that you can run it without needing to run the full software program. The piece should have what you need built in to it. Make sure you discuss any software compatibility needs with the composer a head of time!!! Or, if the composer or technical person will be running it for you, you don't have to worry about any of this! Bonus.

If you *are* interested in exploring composition or improvisation with electronics yourself, there are several interesting programs you can check out.

MAX MSP is the standard in electronic music. It's extremely flexible, and a lot of people know it so you can get advice and support easily.

Open Music: very flexible environment for programming; requires specialist knowledge, but has many creative possibilities. Can be run via MAX also.

LiSA: a real time sampling and processing program made at STEIM in the Netherlands. It's got a creative and flexible interface, and can be a lot of fun. It does not have the same broad applications as MAX, but for improvisation it is something worth checking out.

Other common software:

ProTools: this industry standard is used for recording mainly, but can also be used to organize samples and make soundtracks. Requires use of their external hardware.

Digital Performer: Very thorough and comprehensive recording, sampling, (re)mixing software. Expensive, but probably one of the best programs to learn if you are starting from scratch. If you used this and MAX, you would be set!

Logic: Apple's comprehensive music production software. Operates like a studio environment, does what ProTools does, and much of what Performer does. If I was starting from scratch learning programs, I would definitely consider this option. There is a Pro version and an Express version, which is more for students and hobbyists.

More immediately accessible, 'user friendly' programs include **Ableton Live**, a program I've used myself for everything from recording (a stand in for ProTools, if you don't need super fancy studio editing capabilities, and it doesn't require its own hardware) to improvisation system set-ups (you can program different effects processing over time, and control with pedals), to sampling. Also, people use programs like **Cakewalk** and **Cubase**.

Microphone(s)

Two mics are officially needed to amplify the clarinet or bass clarinet properly, because the sound comes out of all the toneholes. It is possible to use one microphone and position it so that it is aimed at the middle of the instrument-- *if* the microphone's pick-up is wide enough to capture the throat tones and the lowest notes.

I love the AMT mic, which I can use on the clarinet and bass clarinet; for many live-electronic pieces I find this one mic is enough to pick up the whole instrument, though the throat tone A and B-flat are fainter. Depending on the piece, this may or may not be acceptable. It's a satisfying sound quality to cost ratio, and the mic clips on to the instruments. I also have a Rode microphone that I can use on a stand when needed. AMT makes a lovely double mic especially for clarinet, if you have the money, or if you are only performing on clarinet and not also bass clarinet.

Audio Interface and Pre-Amp

This can be two separate pieces of equipment, but it's often in one. This piece of hardware connects your acoustic sound to the computer and changes it to a digital signal; usually also has a pre-amp in it for the microphone (which is needed). Price affects sound quality a lot here.

You can buy an inexpensive (\$200) USB box with two ins and outs (that's where the cables connect). This is OK for rehearsing or getting started. However, for a professional quality concert you need a better interface. A fast firewire interface makes a big difference. I usually borrow one of these for concerts. It's a \$1500 (€1200) piece of equipment. Recently I found one I *really* like the sound of:

Fireface 800 made by RME

I found it had an even better sound than the MOTU, which I'd used before.

For a mid-range, quite decent unit, look at M Audio's firewire units (like the 1814 for \$500) and RME hammerfall units.

It is also possible to buy an interface that has a MIDI interface, which you might need for some set-ups. I have a separate MIDI interface, but if I were buying new equipment now, I'd consider one piece of equipment that has both. (MIDI = Musical Instrument Digital Interface ☺)

Some people discourage 'combination units' because if something breaks, it's all in one. But for portability, it can be useful!

You will see units with a variety of 'user interface' styles—mixing board style, keyboard style, box with knobs and scroll windows. They basically 'do' the same things; it's just a matter of how you want to control it. If you want to do mostly recording, a unit with a mixer-style layout might be handy. If you are doing live performance, the keyboard might be useful (or if you use music notation software too, and want to have a quick note entry tool).

But if it's essentially recording/processing, then you can set the controls on the box and use the software panels to control mixer functions (it literally looks like a mixer on the computer screen), and/or performance functions (there are software panels with equivalent 'knobs' 'sliders' 'pedals' and graphics of sound waves).

Good tape works for first-timers:

Austin, Larry	Tarogato for bcl or cl and tape (1999, 9 minutes)
Bruynèl, Ton	Intra 1 (1971) or Dialogue (1976, 9 minutes) both for bass clarinet and tape or Looking Ears (1972, 9minutes) for bcl + piano with tape Beautiful electronics parts; creative graphic scores
Matthews, Michael	...of the rolling worlds bcl + tape (1999, 11 minutes) Fist Sea bass cl + tape (1986, 8 minutes)
Pohjannoro, Hannu	saari, rannaton (an island, shoreless) bcl + tape (1994, 9 minutes)
Smetanin, Michael	Ladder of Escape bcl + tape (1984, 4 minutes)

More difficult works in terms of bass/clarinet technique and the electronics;

some for tape, some with live-electronics:

Bresnick, Martin	Tent of Miracles, bcl + tape
Burgers, Simon	Pastiche! bcl + tape and optional video (1994) Tape part is bit dated now, but still provides great 'ensemble' challenges rhythmically virtuosic, 'normal' notes
Davidovsky, Mario	Synchronisms No. 12 (in progress), bass clarinet and tape
de Leeuw, Ton	Mountains (1977, 18 minutes) for bass clarinet and tape you must be able to circular breathe and slap tongue for this piece
Lowenstern, Michael	1985, bcl, tape. (1999) After the Rain, bcl, interactive electronics (1992) But Would She Remember You, bcl, tape (1996) King Friday, bcl, tape (1997) Spasm, bcl, tape (1993)
de Man, Roderik	Ecoute, Ecoute bcl + tape (1999, 9 minutes)
Moss, Lawrence	Harried bass cl + tape (1999, 10 minutes)
Puumala, Veli-Matti	Kaarre II cl with dance + live elektronics (1992-93)
Rai, Takayuki	Sparkle bcl + tape (1989, 10 min)
Raxach, Enrique	Chimaera bcl + tape (1974, 9 minutes)
Risset, Jean-Claude	Voilements, cl + tape
Siegel, Wayne	Jackdaw for bass cl and tape (1993, 8 minutes) up-tempo, virtuosic rhythmical piece
Smith, Ronald Bruce	Something Suspicious (small) for bcl+ live electronics (2005, 8 minutes)
Trbojevic, Jovanka	Le fantôme du vent (1998, 17') Finnish work bcl tape + live electronics
Tüzün, Tolga	Borderline for cl + live electronics (2003/06, 10 minutes) virtuosic piece with many microtones
Ziporyn, Evan	Walk the Dog for bcl and electronics (1992, 25 minutes) groovy, relentless work with many effects, incl singing and playing

Major works for tape or live electronics:

Boulez, Pierre	Dialogue de l'ombre double cl + elect (1985, 18 minutes)
Goebbels, Heiner	In the Basement, bcl, tape (1996/1997)
Mochizuki, Misato	En arcades clarinet + electronics (1997)
Reich, Steve	New York Counterpoint cl and tape (1985)