

## **Suggestions for Equipment Purchases and Grant Budgets**

Prepared by Robin Shoaps, March 2007

### Audio Equipment Selection:

What follows are general guidelines with the anticipated needs of linguistic anthropologists and their budgets in mind. In general, if you have more money to spend you will get higher quality audio (and video) recordings, but with the trade off of equipment size and complexity. Ultra pricey (\$1000) microphones are usually larger and may also defeat the purpose if your recording equipment isn't built to maximize their sensitivity. Roughly speaking, prices jump dramatically from the cheap "consumer" category to "pro" and there is little in between. What is listed below is the best of the middle range. Keep in mind that "pro" needs are generally not those of linguistic anthropologists, so don't spend too much time coveting that fancy "pro" equipment that is probably not the best match for your needs. In fact, the pro forum that probably comes closest to our applications was public radio (such as "This American Life" and NPR freelance correspondents) were using Minidisc recorders at least until recently.

Seriously consider buying multiple recording devices at different price-points and levels of complexity. If you plan to have consultants make field recordings (I strongly suggest this!), you will need multiple recorders. As a general rule of thumb, I would say four is the number to shoot for – one for yourself for everyday field recording, plus three for consultants (this also gives you a back up in case one breaks). Depending on the level of technical sophistication of the people in your field site, their access to computers (for downloading data), availability and difficulty of changing recording media, etc. you may need to get different recorders for your consultants than what you use yourself.

In selecting audio (or video) recorders, the following considerations apply:

1. Size – if they are making "naturalistic" recordings, something large, heavy or clunky may introduce an element of "stage fright" into the interaction and will be a burden to carry around for ambulatory situations (processions, conversation while walking to or from an event).
2. Ease of use – lots of buttons, levels to set, lights, etc. can make the equipment seem difficult and intimidating to less tech-savvy people (even to anthropologists!). I've found that in my fieldsite, Minidisc (MD) has the easiest interface and it has the plus that people are familiar with the idea of needing to add blank, cassette-like media. Some of the new digital recorders require setting up folders, reading an English language display, etc. The easier it is to record, the more often people will do it. Lastly, how hard is it to save or delete the recording? What if your consultant presses a button accidentally and doesn't see or understand the "delete okay?" message on the LCD screen and accidentally deletes what they've recorded? Everyone prefers using something easy and appreciates having the confidence that they won't break it or accidentally erase a recording.

3. Media: if you set up WAV as the default recording quality, the recording time is significantly shortened. This means that you or your consultant will need to change media (flash card) or export the data onto a computer via USB fairly frequently. Unless your consultants have regular access to computers (that are up-to-date enough to have USB connections) or can stop by to see you often enough that they can have you do this for them on a regular basis, you won't be able to get the quantity of recordings that you could get if you simply give them a stack of blank minidisks. If you use a flash recorder you'll want extra flash cards (and a card reader for your computer) to give consultants so they can change them on their own. I found that I got the best recordings when I just let people keep the recorders and blanks for months.
4. Price: for obvious reasons, if you want three or more recording devices, price is an issue. As of Spring 07, a general rule of thumb is to plan on spending around \$300 per recording device for MDHD, M-Audio or Edirol R9 recorders, more for Marantz, Sony or Tascam solid state recorders. Factor in the cost of 1-4GB flash card or other media, you will want at least one spare media cartridge per recorder, unless you are using MD.
5. Transcription. If you're lucky enough to work in a site where you can have locals transcribe independently, you may want to have them do this on a cheaper player or on a computer to save wear and tear on the recorder. When I used MDs I purchased several players (around \$100) that were used only for transcription. Make sure it's easy to get your recording off the recorder and onto (hopefully inexpensive) equipment that your consultant can transcribe from. A benefit to this is that you don't have to worry about people forgetting how to move between play and record modes on the recorder. Keep in mind that first pass transcription (what your consultants will do) can be done in mp3 (convert files from wav to mp3), meaning cheap (low memory) mp3 players can be used or that less memory needs to be used on a computer.
6. Power supply: How many hours does it record on battery power? Does it have rechargeable vs. regular batteries? Will your consultant have to remember to recharge it between uses? Some models only have their own, non-removable, rechargeable batteries. Others (like MD) allow you to add on a regular battery pack (with AA batteries) to supplement the internal batteries. Do you lose everything when it runs out of batteries? Does it have a DC charger? More specialized batteries sizes and voltages are hard to come by in third world countries and may be past or close to their expiration date by the time you purchase them, so recorders that take AAA or AA batteries are most convenient.

For my purposes, I have found that my Sakapultek consultants are very comfortable (and now, used to) MD. The new HD recorders record digitally AND allow digital output (that was the drawback of the older models), so you can maintain recording quality. The media are cheap and there is now a 1GB size disc. My consultants don't have to worry about

transferring anything to a computer. They merely save all the recorded disks for the next time they see me (great if you want to leave recorders with people for years, as I have done). Plus, the disks are cheap enough that I encourage them to use a new disk each time they make a recording (rather than try to fill up the whole 74 minutes). In essence, I don't have to interfere at all. Plus, they can transcribe using a cheaper MD player.

For those with more tech savvy consultants, I think the Edirol 09 is the way to go. They can dump the recordings onto a laptop or local computer themselves and record directly into WAV, while transcribing in MP3. You could also have them transfer files as WAV but do most transcription in MP3 on a cheap MP3 player, if you are willing to convert file formats for them (easy to do).

If you don't plan on doing prosodic analysis, recording multi-party interaction in places with lots of background noise and aren't working with an endangered language (using the best equipment you can for recording endangered languages is the best practice), you may consider using stereo MP3 recorders – Olympus makes a nice model for about \$200. These are super easy to use, particularly for those who are already familiar with the ipod concept. They're very small – great for unobtrusive recording – and have decent sound quality when used with external mics.

Now, in addition to everyday field recorders and mics (small, clip-on and inobtrusive is best – I recommend the Sound Professionals \$70 "T-mic" as entry level for most applications), you'll probably want a recorder that is higher quality and not necessarily as small. You can use this for documentation (working with moribund languages), phonetic/phonological work or recording large events where a more obtrusive recorder is less of an issue. This sort of recorder could also be "planted" unobtrusively by you at a site in advance for recording everyday (dinner table) interaction. Most of the top of the line digital recorders (which tend to be larger) have an MP3 option, so you can also use these for elicitation/interviews that you won't be analyzing for prosody, etc. You can still set it up so that it isn't as obtrusive if you have time to prep the room in advance.

Even if you plan to work a lot with video, I recommend getting a couple of audio recorders. Among other things, I think it's prudent to record audio separately, to supplement what you capture with your video recorder. For example, it's often less disruptive to have a participant in a recorded event wear a small recorder while you stand at a distance and film in zoom with a mini-shotgun mic. Having both audio perspectives will be useful for capturing both side conversations close to the action (if you have your volunteer wear omnidirectional lapel mics) and for capturing the "on-record" performance with all background noise filtered out. Also, if you are going to transcribe audio in the field, it's easier to take the audio directly from a recorder, rather than pull it from a video recording. Lastly, until people are familiar with what you're using the recordings for and comfortable being video-recorded, audio recordings are a good way to begin collecting data.

For the high quality audio recorder, I recommend the TASCAM HD-P2 or Marantz PMD 660 or 670.

Mics: At minimum you'll need both a camera mounted mic and possibly wireless lapel mics for video recording.

Wireless mics require two separate pieces of equipment. First, you need an amp that plugs directly into your recording device. This receives the signal from the mics. The mics (lapel or handheld) have a chip or attachment that sends a signal to the receiver. So wireless lapels are not as small as the wired ones and generally also require their own battery power (and they actually have wires leading from the mic to attachment, though not to recording device. Most higher end handheld mics allow you to screw a signaler onto the end, converting them into wireless. Dedicate some mics for video. For audio, plan on getting one multipurpose (T-mic) for each recorder, plus one shotgun, one set of lapels and a cardioid mic for special applications. In general, good lapel mics are better than T-mics, but they require more skill in placement – often hard to work out when you or your consultants are recording on the fly. Anything with external batteries requires extra steps in preparing to record (making sure they have batteries, are turned on, etc), especially if you'll be working where odd-sized batteries are expensive and hard to get.

Video Equipment Selection: There are many great, small digital cameras on the market, for much more reasonable prices than in the past. You may even want to consider having more than one, if you follow the methodological model above of having consultants have their own equipment. In addition to the considerations above, for video you want to be especially sensitive to visual quality, obviously.

If you will be using video, you may consider purchasing a deck (MiniDV to VHS or non-data DVD) so that you can make back-ups of your recordings (I recommend making your own backups on DVD, by hooking your camera to your computer and using basic video editing software) and make copies for consultants. If you work outside of the Americas, ask an expert if the DVDs you will make will be readable by local DVD players.

The best cameras now have 3 CCD (three color chips), which makes for much better images. Two models used by discourse analysts on the West Coast are "prosumer" quality: Canon GL-2 (approx \$2000) and the Sony HDR HC1 (approx \$1700). Go to a Best Buy and actually hold and look at one. Make sure that it has some sort of "Night vision" setting that allows for recording in dark spaces without having to use extra lighting (which can be really obtrusive! Although Night Vision affects color). Check to see if it has a convenient place for mounting an external mic, as well and look into recording media type and price per hour.

You will need a tripod and may consider getting a table top as well as floor model. It gets really tiring holding even a light camera for hours (and some of the new ones are so small you can't hold them on your shoulder like the old ones), so if you have to make most of your recordings using a handheld method, practice and use tricks like leaning against walls, posts, chairs, etc. Most high quality cameras now have "jiggle correction" also.

Wireless mics require transmitters that have to be placed or carried, but wireless lapel mics are preferable for situations where your consultants are moving a lot or will be far from the camera (or for recording children). For a static, but multi-speaker scene, you can pre-wire the scene with high quality binaural mics and use extension cords to reach the

camera (on a tripod). I think this sort of set up is optimal for recording dinner table talk, small gatherings in homes, etc.. There are a variety of shotgun and omni directional stereo camera-mounted mics as well – though these make your camera much more obtrusive, particularly the shotgun mics. The former are good for large public events or places where there is background noise and the speakers are close together. Stereo omnidirectionals work better for dispersed, multiparty interactions or performances without a large audience (don't use for large events because they will capture audience noise). Ideally you want one of each kind.

A note on recording QUANTITY:

Dissertation fieldwork is a unique opportunity in the lives of most anthropologists. At virtually no other time in your career will you have the amount of time and lack of competing demands for such an extended period. Nor will you have as many opportunities to “cast a wide net” in terms of data collection. You may not get another opportunity to do extensive fieldwork until you have tenure.

Don't underestimate the amount of data that you will need for your project. Human error, background noise, etc. are the cause of many unusable or unsuitable recordings. Plus, as your interests evolve you may find that some of the recordings you've made are simply more interesting and rich than others – it's terrible to find this out post-field when you realize you only have one recording of a particular speech genre. Lastly, having a large backlog of high-audio-quality, untranscribed recordings are a goldmine for future research (you can get tenure off of writing them up). If you can pay consultants to transcribe for you after you leave the field and/or, you will be able to make future, inevitably shorter, field trips much more productive.

I left the field with about 100 hours of intelligible recordings and transcribed approximately 30 hours while I was there. While obviously not every transcribed recording made its way into my dissertation analysis, having such a broad exposure to and understanding of discourse influenced my project and my subsequent research immeasurably. I am now “mining” the leftover recordings by having consultants transcribe them, as I take periodic, short trips to work through transcripts with them and pick up the materials.

Writing a Budget: Don't think in terms of “what's the minimum I need in order to do my project” – think about your ideal situation. My Wenner-Gren dissertation budget was very bare-bones – apparently too much so, they asked me to revise it before I got the grant. I ended up spending \$8000 on equipment alone and used every bit of it!

Annotate your budget with short descriptions of what the equipment will be used for (otherwise “4 microphones” sounds like an unnecessary or unmotivated expense) and be as specific with brands and model numbers as possible.

Make sure everything you might need is in the budget. So in addition to the equipment mentioned above, think about recording media (you want at least a hundred hours of blank audio if you will be using multiple recorders, and at least 70 hours of blank video – your consultants will want you to be “videographer in residence” so many recording hours may go to beauty pageants, school talent shows, birthday parties, etc.), cables (extension cables for mics; extra USB or firewire cables); a headphone amplifier; multiple sets of high quality and earbud headphones (for checking recording levels and for transcription); MiniDV to VHS deck; batteries; cases for mics and recorders; external hard drive for back-up; and software. All of these costs need to go into your budget. Put them in specifically – “miscellaneous” categories are to be avoided/or kept very small and cheap. They are the red-flag of an inexperienced researcher and poorly designed project. A final note on cables and adaptors – plan on spending nearly \$100 on a “grab bag” of cables, particularly if you’ll be working with video. You will want to be able to play video on a TV, through a VCR or VHS handycam (to dub recordings for consultants) and through a laptop – all of which may have different inputs, etc.

Having budgeted for all of these needs indexes feasibility and a well-planned project – two major considerations for granting agencies. Furthermore, endangered language documentation has raised the bar in terms of funders’ awareness of recording equipment and practices. Similarly, we at the U of C are several years behind in preparing students in the nitty-gritty of interactional analysis research so being vague on the methodological and technological specifics just won’t cut it anymore.

#### **Makes and Models:**

Digital audio recorders:

- Olympus WS 300M series
- M-Audio Microtrak
- Edirol R9
- Sony HD-MD
- Marantz PMD 660/670
- Tascam HD P2

Video cameras:

- Canon GL-2
- Sony HDR HC1 or DCR VX2000 (both NTSC, for Europe, PAL may be more appropriate)
- A good very high quality camera, appropriate for visual anthropologists is the Sony HVRZ1U (approx \$5000)

Mini DV-Deck (for digitizing into computer)

- Sony GV-D1000 (about \$1000)

Mics

- Shotgun (mounted on camera, above people being filmed if possible): Sennheiser K6
- Wireless: Shure UC1-UA or Sennheiser ew100

- XLR wireless lapel: Shure makes several
- AVOID “noise canceling mics”

Note on XLR mics—these tend to be more “professional” quality, though much less common in ling anthro/linguistics work—they’re bulkier and many recorders don’t have inputs for them (though wireless for cameras and the Marantz do). You can also adapt “down” from XLR with XLR to \_” cables.

Mixer (attaches to bottom of camera to send one mic to each channel (for stereo):  
Beachtek DXA-2S (exact model depends on camera)

Headphone Amplifier (can buy and get info at music store)  
Roland makes one  
Samsung 8

Headphones

Get Sennheiser, over the ear headphones, expect to pay at least \$60. Good stereo stores let you listen to a CD of your choice with various headphones. Comfort plays a big factor in choosing headphones.

Recording Media (prices reduced if purchased in bulk):

Blank 1GB (7 hours, less depending on soundquality) MDs:

Blank 2-4 GB compact flash cards

Memory Card (comes in different sizes, predominately used by Sony)

Blank mini-DV (records approx 1 hour)