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Including music and the temporal arts in language documentation

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This chapter is intended for linguistic researchers preparing to undertake fieldwork, probably documenting one of the world's many small or endangered languages. Recognising that linguists have their own priorities and methodologies in language documentation and description, I will advance reasons for including in your corpus the song and/or instrumental music that you are almost certain to encounter in the course of your fieldwork. I start by providing an overview of current thinking about the nature and significance of human musical capacities and the commonly encountered types, context and significance of music, especially in relation to language. Since research funding usually precludes having a musicologist tag along in the original fieldwork, I will suggest some topics for discussion that would be of interest to musicologists, and make some suggestions for what is needed on a practical level to make your recordings useful to

musicologists at a later date. I comment on the technical and practical requirements for a good musical documentation and how these might differ from language documentation, and also provide some suggestions on a workflow for field production of musical recordings for community use. Examples taken from my own fieldwork are intended to provide food for thought, and not to imply that music and dance traditions in other societies are necessarily structured in comparable ways.

1. Music, language and human diversity

The human inventiveness that underlies the production and development of language, music, and other communicative modes draws on various innate cognitive capacities for communication that are framed in human sociality (Cross 2008, Sperber & Hirschfield 1999). Like language, music is taught, learnt and performed through human interaction. The same arguments advanced for documentation and preservation of the world's linguistic diversity (Grenoble & Whaley 1998) can be applied to musical diversity (Marett 2010, Marett & Barwick 2003). The following survey of the nature and importance of human musicality is intended to provide a framework for the linguistic researcher to understand some ways in which musical and linguistic capacities may differ, and the consequences of this difference for documentation.

1.1. Human musicality

Patterned sequences of speech, sound and movement in the temporal arts of poetry, song, music and dance are found in every human society. Cognitive psychologists and evolutionary biologists have theorised that this enables group synchrony, thus conferring evolutionary advantage (Cross 2003: 380). Much early work by cognitive psychologists on human musical capacities was tied to Western conceptions of music and musical practices, and used Western music in its experimental design. It is now acknowledged that non-Western musics need to be taken into greater consideration in the field of evolutionary psychology (Cross 2007: 662, Fitch 2006: 206, McDermott & Hauser 2006: 113).

Although some have suggested that in evolutionary terms music can be characterized as 'auditory cheesecake' (Pinker 1997: 534) or 'non-adaptive pleasure-seeking behaviour' (Huron 2001), arising as a side-product of other more important faculties such as language, other researchers have argued that music may have

played a key role in enabling the development of human cultures everywhere, and that certain aspects of musicality may have been the target of natural selection (Cross 2009, Huron 2001, McDermott & Hauser 2005). Fitch points out that different components of music capacity may have different evolutionary histories:

> music integrates a wide variety of domains (cognitive, emotional, perceptual, motor, …), may serve a variety of functions (mother-infant bonding, mate choice, group cohesion …) and may share key components with other systems like language or speech. (Fitch 2006: 174)

The idea that music is a 'universal language' is widespread in Western societies, but ethnomusicologists have been deeply wary (Campbell 1997, Harwood 1976) and have generally resisted attempts to define universals in music, stressing the need to understand each music system on its own terms, and pointing to the lack of comparable in-depth knowledge about music in many of the world's societies (Nettl 2000). In recent years, prompted in part by an interest in music by evolutionary psychology, and in part by a perceived vanishing of traditional musical cultures in response to pressures from the global music industry (Mâche 2000: 475), there has been some renewed willingness by ethnomusicologists to consider questions of universals. The primary stumbling block to this notion is that, although musical behaviours are ubiquitous, they are heterogeneous and it is very difficult to arrive at a satisfactory definition of 'music'. Ethnomusicologists and musicologists have generally adopted very broad definitions such as 'humanly organized sound' (Blacking 1973). Others have pointed out that the very heterogeneity of musical expression points to its productiveness as a human capacity. Even though it is difficult if not impossible to arrive at a definition of musical features music that occur in all possible instances of it, all known human societies have cultural practices that can be called musical.

Nevertheless, '[w]hat any non-Western culture conceives of and practises as music may have features that do not map onto Western musical practices in any straightforward way' (Cross 2007: 652). For example, in Pitjantjatjara[1], one of the Western Desert languages of Australia, the word *inma* encompasses not only music, but ceremony, accompanying dance, body painting and ritual paraphernalia (Barwick 2000, Ellis 1985: 70-71). This is consistent with Cross's suggestion that since 'the concept of music is amalgamated with that of dance in many – perhaps the majority of – cultures' it would be 'parsimonious to treat music and dance as intrinsically related or simply as different manifestations of the same phenomenon' (Cross 2007: 654). Accordingly, much of what I have to say about music inevitably addresses associated movement, although this paper will not focus on movement and dance dimensions of ethnographic documentation (those interested will find useful discussion and references in Hanna 2001). Even though not all individuals within a society are musical, and humans may not be the only species to exhibit

[1] Language code ISO 639-3 pjt

apparently musical behaviour, 'it seems that humans have an innate drive to make and enjoy music and that they are predisposed to make music with certain features' (McDermott & Hauser 2005).

One human capacity that underlies the social function of music to facilitate group cohesion is entrainment, 'the coordination in time of one participant's behaviours with those of another' (Cross 2007: 15) (see also Clayton, Sager, & Will 2005). Interestingly, entrainment of movement to music is not confined to humans, but is also found in various species of birds and other creatures who engage in vocal mimicry, suggesting that the capacity for vocal mimicry, necessary in humans for language learning, is a prerequisite to musical entrainment (Schachner*, et al.* 2009). Attention to periodicity in the form of a sustained musical pulse and period correction mechanisms are two key traits that appear to be both human-specific and music-specific (Bispham 2006). Neuroscientists have shown that the basal ganglia, a brain structure involved in perceptually 'keeping the beat', is also involved in the coordination of patterned movement (Patel 2006: 101). While the human capacity for entrainment of movement to aural periodicity appears to be automatic, entrainment of movement to visual cues is much less successful (Patel*, et al.* 2005). Other research has suggested that music may facilitate group bonding and mood regulation through physiological effects arising from the release of oxytocin (see discussion in Huron 2001).

In a series of papers, Ian Cross has argued that music's under-specification of referential meaning also fosters group cohesion by means of what he terms 'floating intentionality' in the 'numerous social situations in which unambiguous reference in communicative acts is not a desideratum as it may precipitate conflict in attitudes or actions' (Cross 2007: 655).[2] He sees music's 'semantic indeterminacy', together with the 'guarantee of cooperativity' offered by entrainment (in group singing and dancing activities) as enabling its social powers to develop and sustain a sense of shared action and intention, and argues that music stands in a complementary relationship with language as part of the 'human communicative toolkit' (Cross 2009: 192).

The ethnomusicologist Bruno Nettl has made the following suggestions for things that all musical utterances have in common:

> There is a more or less clearly marked beginning and ending. There is some redundancy, some repetition, balanced by some variety, articulated through rhythmic, melodic, textural means … The musical utterance consists of smaller units which are fairly well marked, and

[2] Enfield has argued that the role of inference in semantics means that differing interpretations are perhaps more frequent than commonly supposed even in language. He hypothesises that 'lower frequency words will show greater variation in meaning across speakers', and that ' because the usage contexts of these words are less varied, speakers will have been deprived of the chance to rigorously test ongoing hypotheses' (Enfield 2007: 7).

> for which one may substitute others from a given cultural repertory in order to produce new utterances (Nettl 1983: 39).

He goes on to enumerate various other ubiquitous or very common features of music. Some apparently universal features of music — such as prosodic chunking, octave generalization and transposability, the tendency for stepwise movements between discrete scale steps, the use of unequal intervals within a scale, descending contours at the end of a phrase — seem to stem from cognitive processing and memorization capacities shared with language (Harwood 1976). Other common features — such as music's association with dance, speech and religious behaviour, the musical specialist, the valuing of innovation and the exceptional (Nettl 1983: 40-41) — stem from music's social role. The very heterogeneity of musical phenomena and mutability of music-making practices can be seen as domain-specific effects and manifestations of broader human cognitive abilities to create culture (Sperber & Hirschfield 1999), what Cross has termed 'the human capacity for culture' (Cross 2008: 148). One of the things that makes artifacts like language and music 'cultural' is that they are 'transmissible by non-genetic means' (Cross 2008: 148). Harwood's observation that 'the process of understanding and engaging in musical behavior may be more universal than the content of musical knowledge or action' (Harwood 1976: 523) points to commonalities of function and process in music-learning and music-making.

As many have observed, in several dimensions music and language are 'poles of a continuum rather than existing as categorically discrete phenomena' (Cross 2003: 109). As already mentioned, production and perception of both music and language depend on shared human capacities. Cognitive and neurological studies tell us that although there is considerable overlap in brain processing, there are some specific areas of the brain that appear to be dedicated to musical perception and production (Peretz & Zatorre 2005).

Fitch has proposed a list of 'design features' for music in relation to language that sees them as similar in complexity, generativity, the fact that they are culturally transmitted and that both are transposable in pitch (that is, a melody or speech intonation pattern is recognizably the same when transposed to a higher or lower pitch). He proposes that music differs from language in having discrete pitches (as opposed to the continuously variable pitch of speech) and isochrony (a regular periodic pulse that provides a point of reference for other temporal features) (Fitch 2006: 178-179). To these may be added music's fostering of simultaneous action in performance, rather than asynchronous interaction as in language (Cross 2007: 654).

Song, the most commonly encountered form of music, integrates music and language, but there are no objective criteria for distinguishing 'song' from 'chant' or 'intoned speech' (Nettl 1983: 39) other than an increasing tendency for quantization of pitch and/or duration as we move along the continuum towards 'song'.

Poetry and other verbal genres that are not sung typically share three further distinguishing 'design features' that Fitch attributes to music rather than language: they typically occur in specific performance contexts, they may consist of a repertoire of discrete repeatable pieces, and they tend to be what Fitch terms 'a-referentially expressive' (equating to Cross's 'floating intentionality' already mentioned) (Fitch 2006: 179-180). The language of song, like the language of poetry, is frequently oblique, cryptic and emotionally moving (Juslin & Laukka 2003, Walsh 2007). In many cases, poetry and the verbal arts, like music and song, may be measured isochronously and performed in synchrony by multiple participants, meaning that in some key respects they resemble music.

2. Music in language documentation

Although music and song are not directly mentioned in some of the foundational texts of documentary linguistics, sung musical genres may be indirectly referenced by such titles as 'ritual speech event' or 'litany' (Himmelmann 1998: 179) or 'verbal art' (Woodbury 2003: 47). Documenting musical events when they occur (and when invited) falls squarely within language documentation's brief to be diverse and representative of as wide a range of language use as possible: 'documenters take advantage of any opportunity to record, videotape, or otherwise document instances of language use' (Woodbury 2003: 48). As form/meaning units, songs should be 'included in any complete language description' (Turpin & Stebbins 2010: 1). Because of music's ability to 'transform experience' (McAllester 1971: 380), its integration into other realm of human activity (Cross 2007: 658) and its association with pleasure (Blood & Zatorre 2001), it is likely to be highly valued by collaborators within the speech community (Barwick 2006). Not all societies have instrumental music genres separate from vocal music (for example, the traditional musical genres of Aboriginal Australia consist entirely of vocal music, some with instrumental accompaniment, but no genres of purely instrumental music). If present, instrumental music is likely to be valued just as highly by community collaborators as vocal music and dance.

Documenting music, dance and the verbal arts may also yield interesting data for language documentation, suggest new directions of linguistic inquiry or fill in gaps. For example, in documenting Iwaidja *Jurtbirrk* love songs, new domains of emotional vocabulary emerged, and the songs' frequent use of the first and second persons and directionals filled in some missing slots in Iwaidja verb paradigms that had proven next to impossible to elicit directly (Barwick*, et al.* 2007 and Evans, chapter 8)).

Because of the likely significance for participants, working on song and music can be a great way to build relationships with collaborators and produce tangible outputs from your project in the form of CDs or videos of performances. In Wadeye, Northern Territory, the iTunes database we helped to create in the Wadeye Library and Knowledge Centre to provide a community access point to research results from various song documentation projects has been the most accessed collection in the library (Barwick, Marett*, et al.* 2005, Nakata & Langton 2005). Song and music recordings may be used as a point of reference for future tradition bearers (Marett*, et al.* 2006), and the emotional power of hearing the voice of deceased family members is often remarked on by users of archival recordings.

The efforts of communities and language documenters to record and document musical events may also contribute to an important record of human diversity. As Mâche notes, '[m]any practices testifying to … cultural diversity … are no longer available outside the archives where our taperecorders have allowed us to freeze their images' (Mâche 2000: 475). The provision of secure archiving for recordings of music and dance may be an important motivation for community collaborators interested in music and dance.

It clear that it is impossible to predict exactly the content, structure and social and contextual meanings of the music and dance in any society. Linguists preparing for their first field trip may wish to prepare themselves by consulting previous research to ascertain whether there are any existing descriptions of performance genres in the area. Even so, because of the high value typically given to innovation and creativity in musical expression, the musical pieces and dances performed are likely to change over time, as new composers and performers make their contributions.

It is however possible to make some generalisations as to the types of contexts in which music can be expected to occur. Crucially, the interactive nature of musical behaviour means that it is likely to occur in interpersonal contexts. The use of music in caregiver/infant interactions, including lullabies and children's songs, appears to be ubiquitous in human societies (Trehub 2003), as does its use in entertainment, courtship and religious or ritual occasions (Cross 2007).

Recording in any of these domains is likely to involve issues of privacy and/or intellectual property. Music, songs, dances and poetry are defined as 'works' under international copyright law (see Newman in this volume), and researchers have an ethical responsibility to acknowledge the moral and legal rights of musicians and performers under both traditional and international law, and to align our research and archiving methodologies to support and not interfere with traditional means of knowledge maintenance and transmission (Janke & Quiggin 2006, Seeger 1992, 2001, 2005).

It is advisable to record information about who has rights and interests in music, preferably before making any recording. Bear in mind that traditional law may classify rights and ownership in quite different ways from Western knowledge institutions. For example, in some Australian song traditions, only the song

owner or ceremonial leader has the authority to explain a song, although others may well be entitled to sing it and to have a say in whether or not it is documented (Ellis & Barwick 1988, Marett*, et al.* 2006). Taking advice on these matters is likely to provide some lively conversations, as well as helping you to manage your data and any future publication of it appropriately.

2.1. Documenting song texts

With knowledge of the language, linguists are in an excellent position to work on song texts, but as I have discussed elsewhere (Barwick 2006), there are some common pitfalls. It may be necessary to work with a group of people rather than a single individual in documentation of song texts. It is advisable to be alert to different interpretations and not to assume that there is a single correct form or interpretation of a song text (Walsh 2010) (see Meyerhoff *et al.* in this volume for a discussion of variation in language performance). It is very common for repetition patterns or special song words to be omitted during spoken elicitation of song texts. There may also be elements of improvisation or allowable change between performances of the same song. Phonetic changes, sometimes apparently deliberate, are common and numerous other features of song language have been documented by linguists and musicologists (Dixon 1980, Hercus & Koch 1995, Koch & Turpin 2008, Marett 2000, Turpin & Stebbins 2010, Walsh 2007). In Australia, it is not uncommon for songs to include words in several different languages (for example, one Murriny Patha *Malgarrin* song our team documented as part of the Murriny Patha Song project contains words in the Kimberley languages Djaru and Gija, as well as English (Barwick*, et al.* 2006). Other songs may include or even entirely consist of words in 'spirit' languages (Marett 2000, O'Keeffe 2010), as is the case in the Mawng *Inyjalarrku* repertory of David Manmurulu (Apted 2010, Manmurulu*, et al.* 2008). It has often been suggested that the metrical stability of some song and poetic forms may lead to the preservation of archaic words or linguistic forms but song-specific phonetic changes and the frequently cryptic and allusive semantics may make it very difficult to isolate and identify such archaic forms (Koch & Turpin 2008, Turpin 2005, 2007a, 2007b, Walsh 2007).

2.2. Suggestions for discussions about music

Linguistic documentation can be invaluable to musicology, and more broadly to studies of human diversity, because of the opportunity to interact directly with tradition bearers in their own language in recording discourse about music and allied performance arts. Here are some suggested areas for discussion, many of which arise from or relate to the points previously mentioned.

- definitions of music (does it include movement/dance, other verbal arts?)
- music/dance terminology (for genres, instruments, parts of songs (e.g., musical phrases), vocal quality / timbre, tempo, rhythm, melody/tune)
- how musical traditions are taught and maintained (is there a formal apprenticeship? are there children's songs? who has the right to learn and teach a given repertory?)
- social dimensions of music-making (who performs music? are social groupings such as gender differentiated by genre or musical practices?)
- general discussions about music and its social significance
- interviews with practitioners about how they learnt music and their activities as musicians
- ideas about music origins (where does music come from?)
- emotional connotations of music (e.g., is there an idea of happy, sad or angry music? what characteristics are associated with emotions?)
- range of music/dance performance occasions
- cultural histories or narratives about music or that include music
- relationship of musical genres to linguistic genres (narrative, poetry etc).
- change in musical performances over time (how is music performance different now from in the past?)

2.3. Technical recommendations for field documentation of music

In most technical respects, recommendations for the recording of musical events accord with the standard recommendations for linguistic recording (see Margetts & Margetts in this volume). For those interested, further information about ethnomusicological methods and practices can be found in several volumes (Barz & Cooley 1997, Myers 1992, Post 2004, Topp Fargion 2001). There are some additional technical recommendations that are necessitated by the nature of musical performances or the likely uses of the recordings.

Firstly, music requires high-quality microphones. Get to know your microphone and its capabilities well before your field trip (Kolovos 2010, Nathan 2004). Mono microphones, especially miniaturised lapel microphones often recommended for linguistic research, are usually targeted at the frequencies of the spoken voice at 50-15,000hz (Stevens 1998, Sundberg 1987), which means they cannot capture some of the high harmonics that give timbral character to a voice or instrument. To record music prefer a microphone with a good frequency response over the range of 20hz-20,000hz (check the specification sheet of your microphone).

Because of the group dimension of musical performances you will need stereo to be able to separate out different performers, and you will also need some

directionality to cut out extraneous background noise from audiences and so on. For all-round flexibility in field recording, I recommend the use of a good single-point stereo condenser microphone of the cardioid (semi-directional) type, with XLR connectors and a good wind protection system if you will be recording outdoors. Wind noise can completely spoil a recording, rendering it difficult to work with and even, at worst, unusable.

Placement of your microphone is crucial: for vocal music, make sure it is positioned near enough to the singer to capture the vocal part precisely, but also aim to capture the overall texture of the performance, so that all singers or instrumentalists are included in the field of the microphone (better microphones allow you to select the angle of capture according to the size and distribution of the group). Sometimes you may need to adjust the position of your microphone during a performance (for example if the performing group moves). If this proves absolutely necessary, try to do it between items, not during, because you will introduce noise.

On the sound recording device, record at the best quality available (on a digital device, a minimum of 16-bit, 44.1khz is recommended). Pay attention to setting levels carefully. Too low, and background noise will become obtrusive; too high, and you risk clipping and distortion of the signal. Unfortunately many cheap recording devices do not allow you the option of turning off any automatic level control (also referred to as automatic volume control or AVC) on the recording device. Avoiding AVC is essential for musical performances, where there may be large variations in dynamic range. For example, in some of the Aboriginal music genres I deal with, it is normal for a song item to start with just didjeridu and voice, and for much louder clapsticks to enter partway through the song. AVC will boost volume levels (and any background noise) to the maximum allowable during the early quieter section, but when the clapsticks enter the relative volume of the voice drops away very quickly, making it much more difficult to hear and transcribe. For this music, I set the levels in advance to accommodate the clapsticks, so that each sound source remains at a similar dynamic level throughout the recording. Resist the temptation to adjust levels during a piece, but if you must do so, do it very gradually. It is almost impossible for later sound engineering to compensate for the variations in levels introduced by AVC or tinkering by the operator, meaning recordings will be unsuitable for re-use for professional quality CD publication or for use in a video soundtrack.

It is important to record complete items wherever possible. Since it may be difficult to predict the beginning of an item, the best idea is to turn the recorder on at the beginning of a musical event and leave it running unless asked not to. You can later edit the recording to excerpt the individual items if required for documentation or re-use. Discussions between items are often of considerable interest and can provide important context to the performance (Walsh 2007).

Because musical performances typically have a group dimension (multiple performers, dancers, or engaged listeners) there are good reasons to use video. Video documentation can help with later documentation of participants and their

roles and is the only effective way of documenting entrainment through movement and group coordination to music, including but not limited to dance (Johnson & Snyder 1999, Sklar 2000). Video can also be invaluable for documenting instrumental technique and for clarifying song text transcription in cases where the audio recording is unclear. Unfortunately for the would-be video documenter, in the tropics many performances take place at night, meaning that the quality of video is likely to be poor and perhaps not suitable for archiving.

Dealing with video data in the field situation can be rather difficult because of the large filesizes and the time needed for ingestion of the video data into usable formats for annotation and archiving. Although some video cameras record uncompressed audio, it can also be time-consuming to extract the audio from the video files. If power consumption is an issue in your fieldwork, a more effective use of resources may be to record audio alongside the video, because audio files are comparatively quicker and easier to copy, excerpt and annotate in the field. In this situation it may be a good idea to call on research collaborators to assist with operation of the two recording devices, because it is difficult to do justice to recording of what may be a one-off event if your attention is distracted by monitoring two recording devices. It can be best to save editing of the video until you are in a situation where you have access to the necessary time and processing power, and plan to work on annotation and documentation at a later stage, or even in a subsequent trip.

When recording movement and dance, it can be useful to document the performance space by use of a sketch diagram and perhaps photos from different angles. Movement annotation systems like Laban and Benesh operate at the level of the complete body so while close-up shots may be useful for fine details, most of your video footage should include the whole body (Guest 1989), and at least some of it should include the whole performance group including audience participation in order to document entrainment.

2.4. Music production for local access

The following section deals with some methods and workflows developed for providing local access to music recordings in several song documentation projects in northern Australia. This method is only suitable for public music that community members have agreed to share at a community level. Most of the procedures described can be implemented in the course of the fieldwork trip. While my description refers to some specific technologies and implementations, the functions described may well be achievable using different software tools and formats. This account focuses on audio editing and production, because of the issues I have already described in managing video in the field.

2.4.1. Setting up and using a music database for local access

For local access in communities I have used the free iTunes software, which allows for adding metadata, managing and sharing music files (Barwick, Marett*, et al.* 2005, Barwick & Thieberger 2006, Braue 2004). I have found that this is very quick and easy to set up, although its limitations in metadata management and linking to other digital objects such as images and texts mean that it is no substitute for specialist data and metadata management tools. In most cases a suitable computer was already present in the community in the local library, language centre, council, school or arts centre. From this local repository community members could then select their own preferred songs for listening or burning to CD.

2.4.2. Digital recording of music

Like most researchers, I now record directly in uncompressed digital audio formats, using a minimum of 24-bit 48khz audio (the audio quality standard adopted by the sound archive of the Australian Institute of Aboriginal and Torres Strait Islander studies, where I usually deposit my recordings). As soon as possible after recording I transfer the file to the hard drive of my computer using USB or firewire connection, name it according to our project conventions, and write a backup copy of the complete recorded file to CD or DVD as well as an external hard drive. Our project filenaming conventions use a reversed date system and contain some information about recordist and sequence, which assists in local file management on our computer systems during fieldwork. For example, the filename 20110824LB2.wav would be the second file recorded by me on the 24th of August 2011.

2.4.3. Excerpting music items

An hour-long musical recording of Murriny Patha *djanba* songs, for example, would typically contain 15-30 song items of about a minute's duration, interspersed with discussion by the performers. Using a sound-editing application I open the file and insert markers at the beginning and end of each song item, leaving about 3 seconds before and after to ensure there is a complete item. I label the song items according to sequence in the file (e.g., 20110824LB2-03 indicates the third song item contained within the master file), and then use the application's 'split file' command to create new excerpt files, having first set the export file format to CD-audio quality (16-bit, 44.1khz), which enables the files to be opened and annotated in most standard transcription and annotation software, as well as providing optimal quality when burning to CD from within iTunes. In this case I am mainly interested in the musical excerpts, which I now import into iTunes. I usually undertake basic mastering and organisation of the music database on my own laptop, and then transfer the music files to an iTunes enabled computer.

2.4.4. Adding basic metadata

Inside the iTunes library, select the imported files, and add standard metadata such as the name of the session, the date and the recordist, the performers, and other relevant information that allows the music to be findable using locally relevant categories. (For example, I use the iTunes 'group' field for language name, and the 'genre' field for the repertory name.) I usually reserve the Comments field for identifying the specific song text, if known. Most Murriny Patha *Djanba* songs have known composers and fixed texts, so I may add composer and lyrics information if already known. I then create a playlist from the selected files, which are then available to be shared by listening, burning CDs or adding to portable music players.

Playlists can also be useful for selecting and ordering particular song items for later use in elicitation sessions (for example, working with the composer and others to transcribe and translate the song text). If playing back from the iTunes host computer, metadata can be added quickly to the iTunes database itself. In other situations, our research teams have transferred such playlists to an iTunes-compatible portable music player for use with low-power portable speakers in elicitation settings where computer use is difficult.

2.4.5. Wider publication of research recordings

Once your music collection has been documented, you and your community collaborators may be interested in producing a CD for local or commercial distribution (Barwick, Evans*, et al.* 2005, Garde & Djimarr 2007, Papulu Apparr-kari Aboriginal Language and Culture Centre & Barwick 2000). Not only does this provide a good means of local distribution and publicity for your project, it can also contribute to community development by developing a wider public profile for performance groups (Marett*, et al.* 2006). If looking to publish music recordings, it will be necessary to liaise with publishing companies to ensure appropriate legal and financial arrangements to protect copyright and other intellectual property rights, as well as working with sound engineers and designers to produce a professional quality multimedia package. One advantage of publishing recordings in this way is facilitation of re-use and reference to the relevant song items in research in a way that acknowledges and protects the rights of the creators.

2.4.6. Web delivery of music

Many commercial music publishers, such as the world music specialist Smithsonian folkways (http://www.folkways.si.edu/), now use internet services to advertise and distribute musical tracks, both for commercial use and through online educational services sold by subscription to libraries and universities. The standard availability of web browsers on new computers and the integration of audiovisual

media streaming and offline operation capabilities into emerging web standards and technologies such as HTML5 (Hickson 2011) means that web applications may be an attractive way of presenting multimedia research content such as music collections for community use as well as researcher use. Even when internet connections are intermittent or very slow, it may be possible to set up a web application to operate in offline mode. In 2009-2010, the Murriny Patha song project group in conjunction with Wadeye Aboriginal Languages Centre built on the recordings and information collected by the project to develop a web database illustrated by song texts with interlinear glossing and contextual information presented alongside streaming audio files (Barwick*, et al.* 2010). In this implementation, in which there were up to 30 performance tokens of the same song text, it proved too time-consuming to link the song texts to each individual sound file, but we have previously used ELAN to produce timecoding for presentation of glossed song texts in systems such as EOPAS, the Ethno-ER online presentation and annotation system (Schroeter & Thieberger 2006), Such initiatives are quite timeconsuming and depend on the availability of resources and much effort in collaboration from community members and researchers.

3. Conclusion

Since musical behaviour is so widespread, so dear to human hearts and so closely allied to language and other communicative codes, linguistic fieldworkers are urged to take advantage of opportunities to work with their community collaborators to record and document music and dance when feasible. The results will be of potential interest not only to musicologists, but also to researchers in allied disciplines such as cognitive psychology and neuroscience interested in understanding human diversity in this important expressive domain.

[In the publication, these references are integrated with those of the remainder of the volume – they are provided here for completeness]

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