

Supporting Traditional Music-Making: Designing for Situated Discretion

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ABSTRACT

An ethnographic study of Irish music sessions in pubs elaborates the collaborative work involved in making traditional music. Central to this distinctive achievement is the sequencing of tunes so that they hang together and combine to form discrete ‘sets’, which rely on a shared knowledge of musical repertoires. Our study shows how musicians develop this musical knowledge through the use of digital resources and social networks. It also reveals how musicians construct and make use of various paper props to help bring their knowledge to bear in the actual *in vivo* course of a session so as to maintain the moral order of making music together in a demonstrably traditional way. The social demands of musical ‘etiquette’ sensitise CSCW to the need to design technologies to support the ‘situated discretion’ that is essential to traditional practices. We elaborate this notion through a discussion of requirements for technologies that bridge between online resources and the collaborative sequencing of tunes during performance.

Author Keywords

Ethnography, traditional music, improvisation situated discretion, Irish music sessions.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI)

General terms

Human Factors

INTRODUCTION

Traditional Irish music sessions are to be found at venues around the globe, more often than not in a pub or a bar. At first glance they appear to be quite unstructured, with little attempt to ‘stage’ a performance as one might find in a theatre or concert hall. The music is fluid; played ‘by ear’. It unfolds over the course of several hours and is punctuated by frequent breaks as participants peel off to chat and drink before they return to making music again. The music may appear loose and disorganised but a distinctive *moral order* or ‘etiquette’ shapes how a session is conducted, including what it is appropriate to play, when, how many times and with what instruments. Indeed, the

subtle complexities of this etiquette have led to the publication of ‘field guides’ for beginners [13, 20].

A diverse range of interests in music, its practices, the collaboration that goes on between musicians, and the sharing of music itself has evolved in recent years. This includes work on the design of new instruments for both expert and non-expert musicians [e.g., 5, 6, 21]; support for musical coordination [e.g., 14, 23, 25] and improvisation [e.g., 7, 8, 9, 19, 29]; and for how people use, share, and synchronize music across a range of different social settings [e.g., 3, 4, 12, 16, 26, 33]. Set against these is the Irish music session, a vitally important feature of which is that it is *traditional* – electronic and digital instruments are consciously shunned: amplifiers are generally not welcome, let alone synthesizers or music software running on laptops. So given this apparent Luddite tendency, and that there are numerous avenues already being pursued, why are Irish music sessions of any relevance to CSCW?

The moral order of Irish music sessions is the key. It provides for the collaborative accomplishment of *tradition*, an accomplishment which seems to militate against technological intervention but in fact, only does so in the *in vivo* course of playing music together: *in making the tradition happen again*. Behind the scenes Irish session musicians are as technologically savvy and competent as the next man or woman in the street. Like anyone else they know how to make use of the Internet and they have been doing so for practical purposes of making traditional music for years. Specialized social networking sites support the community in transcribing, documenting and discussing the Irish repertoire, for example, and conventional social media are used to organise sessions and exchange materials.

The apparent dichotomy between traditional practice in actual sessions and the digital technologies that surround them is of interest to us, but also has broader salience for the wider CSCW community. Of particular relevance is the notion of ‘situated discretion’ which reflects the need to develop technology in ways that both respect tradition and yet enable traditional music-makers to continue to leverage the ‘new world’ into the ‘old’. Below we elaborate the work involved in making traditional music, including the production and use of in-session resources and digital resources outside of sessions. In doing so, we uncover the distinctive problems and challenges that confront session musicians in accomplishing tradition and that in turn, inform this broader notion of situated discretion.

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AN ETHNOGRAPHIC STUDY OF TRADITION

Our study of traditional Irish music sessions was conducted through an ethnomethodological approach [15], which has been widely practiced within CSCW as a way of sensitising designers to the social characteristics of particular settings and their work [11]. We visited various Irish music sessions, observing them as they unfolded, capturing video and photographs, and talking to participants. We also conducted informal interviews with some of the participants in their homes afterwards in order to explore how they prepared for sessions, including their use of online resources. Two researchers visited each session. One was an experienced ethnographer who observed and gathered data, while the other was a keen amateur Irish musician who joined in the sessions. Accompanying a player helped the ethnographer gain an inside perspective, enabling them to sit among the musicians rather than observing from the sidelines and facilitating discussions with them during the unfolding course of events.

We visited three different regular sessions in Nottingham in the UK, each informally named after its host pub. The 'King Billy' session meets every Thursday evening. It is a longstanding session, reputed to have been running for over thirty years, and is well known for a high standard of musicianship. The 'Vat and Fiddle' session meets on the second Sunday afternoon of every month, has been running for a few years, and is frequented by a wide range of players, including beginners, younger players, and relative experts. The 'Hop Pole' session is newer still, meets on a Tuesday evening in a suburban pub and is home to a wider variety of players in terms of experience and genre. Outside of these, we also visited the 'Elm Tree', a longstanding session that takes place in the city of Durham, providing an opportunity to observe what it's like to visit a hitherto unknown session as a nomadic outsider.

When we speak about an 'Irish session' we are not, of course, speaking of sessions that have to take place in Ireland; equally, many of the musicians playing at these sessions will not be Irish. Rather, we are talking of informal gatherings of local musicians in pubs and bars to play music whose dominant style and repertoire is drawn from the Irish tradition; a broadly recognisable form of music that has spread worldwide along with the Irish diaspora. The repertoire need not be exclusively Irish, and some sessions (more than others) are open to varied traditional styles including Scottish, English, Welsh, French, Scandinavian and American. Indeed, there is a deal of confusion as to the origin of many traditional tunes that have migrated between these various genres. Our sampling illustrated this diversity. The King Billy has a strong Irish focus, while the Vat and Fiddle and Hop Pole are more diverse, being open to a wide range of acoustic songs and tunes along with a good measure of 'Irish', and the Elm Tree reflected the influence of local Northumbrian music.

Given the relatively diversity of even this limited sample of sessions, we are careful not to claim too wide a generality for our findings; we cannot say that we would necessarily

observe precisely the same practices in other sessions, especially in other regions or countries, though it is likely that at least some of the accountable features of the work involved in making this kind of music will hold because (as we shall elaborate shortly) they are embedded within common 'work practices' or methods of social interaction.

Elaborating the accountable character of social interaction is central to ethnomethodological studies [15]. In place of generalised versions of social order, ethnomethodology seeks to elaborate the social order in lived details of the incarnate organisation of social interaction – i.e., in details of its situated, embodied, and material character as it is made observable and reportable in local circumstances by the particular parties to it for the practical purposes of the work they are collaboratively engaged in 'here and now'. Our study focuses, then, on the interactional work the setting's members busied themselves with: the particular things they said, the particular things they did, the particular things they used and were visibly occupied with.

We present our findings in several parts, beginning with observations on the social organisation of sessions, including the organisation of the pub setting; how tunes are played; how they are sequenced together into sets; how this often relies on various paper props and cues; the notion of 'session etiquette'; and the use of online resources. Irish sessions, like any other live musical accomplishment, are complex phenomenon and so we restrict ourselves here to those features of our studies that speak most strongly to technology design and CSCW.

THE SOCIAL ORGANISATION OF IRISH SESSIONS

The pub or bar setting fundamentally shapes the nature of a traditional Irish music session. A session typically occurs within one area of a pub: side bars at the King Billy and Vat and Fiddle, in the centre of the back room at the Hop Pole, and in a larger bar at the Elm Tree, for example. All of these were connected to other areas in the pub, enabling the wider public to see into and pass through the space of the session. In spite of this, we saw no evidence of explicit attempts to reserve specific seating for the musicians. This distinguishes Irish sessions from other pub performances such as bands where there is a marked stage.

Another grossly observable feature of the social organisation of an Irish session is that the musicians try to sit in a circle if possible and will work hard to maintain the circle as other players arrive, facing inwards towards each other rather than outwards towards spectators. This no doubt aids musical coordination as we discuss below, but it also adds to the sense of informal jamming rather than formal performance. Attendance at the sessions we observed ranged from a handful of musicians up to a maximum of about fifteen. Notably, the circle at the Hop Pole was bisected by a thoroughfare that led from the bar to outside the building where people go to smoke. The stream of people passing through at busy times clearly hindered the musicians' ability to see and hear one another, leading to coordination problems and fragmentation into sub-groups.



Figure 1. Playing in a circle at the Vat and Fiddle.

The temporal arrangement of the session is also significant. While there are generally understood start and end times, these are fluid, with the music beginning when enough musicians have assembled, settled down and had a drink, and ending as the last few drift away or the pub closes. There is no explicit public ritual to mark the beginning or end, the musicians just begin when they feel ready. A session usually lasts for several hours and musicians will come and go throughout just as they might for any other visit to the pub so that the line-up of players is constantly changing. New arrivals need not wait for a break in the music before entering the circle, greeting friends, finding space, unpacking instruments, buying drinks and settling down. Musicians often continue playing as this happens, although one or two may temporarily break off to greet a friend. To this we add the comings and goings of the musicians as they head to the bar or toilets, talk to each other, make phone calls, or go outside for a smoke, again often as the music plays.

Figure 2 (left) shows an example in which somebody passes among the musicians as they play to distribute leaflets, stopping to talk on the way.



Figure 2. Distributing leaflets (left) and 'clutter' (right).

There are many non-musicians present in the pub with varying relationships to a session. First are those who have consciously come along to the session, perhaps friends or family of the musicians, who are happy to sit amongst the musicians in the playing area, attending to the music and talking to them. These 'spectators' may have considerable expertise of the music and may be occasional players themselves. Second are those who do not appear to be directly known to the musicians, but who are evidently interested in the music. They may have heard of the session in advance, through posters in the pub or word of mouth, or just happen to be in the pub anyway. Our observations show them typically positioned in sight of, but probably not among, the musicians. They sometimes show their appreciation of the music through applause, although this is

often not the case, and may depend upon the number of spectators, and maybe the quality and sense of performance of the playing. Last, are others who are present for other reasons and not necessarily interested in the music at all. They can usually be found in more distant areas of the pub and may well include pub staff.



Figure 3. Spectators sit among the musicians (left) while others watch from the back.

The pub setting is a bustling environment cluttered with people, musical instruments, cases and accessories (capos, picks and rosin) as well as general pub paraphernalia (drinks, snacks, beer-mats, menus). The result is a busy setting in which the music is intimately intermingled with other social activities, and in which it is perfectly acceptable to break off playing to engage in these before resuming. This informality is important to the musicians who have come along to socialise as well as to play – to enjoy the "craic" as they might say [20].

Playing tunes

Having set the scene, we now turn to the specifics of playing the music. The first question is how to begin a tune? The most common approach is for someone to 'self-select' [28], with one musician beginning playing in the hope that others will join in. Joining in is especially important and the expectation is that others will do so. It is therefore a problem when no one joins in, leaving the musician with the embarrassing options of petering out or continuing solo (solo performances do sometimes occur but are rare). Launching a tune is therefore a risky moment and not for the faint hearted. In some cases, most notably the Elm Tree, there is a more recognised leader who begins many of the tunes or explicitly invites others to do so. In others, such as the Vat and Fiddle, several musicians may be prepared, or even compete, to launch tunes. We witnessed examples of something akin to the turn-taking that takes place in everyday conversation [28] when musicians played short opening phrases of just a few bars backwards and forwards, before launching into the tune proper. These musical questions and answers seemed to be as much about eliciting and confirming support for joining in as about remembering how to play the tune, and were even seen to occur when those involved were sitting next to one another (and could have counted in). Interruptions are another recognisable aspect of turn taking, and it is not uncommon to see two or more musicians play across each other until one wins out and the other backs off.

Knowing when to join in is also a challenge, especially if the musician does not know the tune or has not played it for a while. Each tune is usually repeated several times so that fellow musicians can identify it and recall it to their fingers. Three repetitions is common, although two appeared to be the norm at the Elm Tree, while more were sometimes seen. Playing a tune just once is rare. The musical form of Irish tunes encourages joining in, typically consisting of several short parts that are themselves repeated (between 2 and 4 parts of 8 bars duration is common). This repetition supports improvisation by enabling players to introduce ornamentations around the basic melody, a key way of displaying virtuosity. Thus, in Irish music, players improvise simultaneously rather than taking turns as in Jazz or Blues. We also observed busking along, that is playing quietly or in a muted way when gradually recalling a tune or when learning it by ear (a valued part of the oral tradition). In general then, the structure of Irish tunes provides a framework that accommodates both beginners and experts simultaneously playing together.

Another question is which instrument to play? Irish tunes are typically played in unison on a range of melody instruments including fiddles, flutes, whistles, melodeons, and banjos. There are also accompanying instruments, most notably guitars and percussion, including the traditional drum (bodhrán). In general, we did not observe the use of amplified or digital instruments with the exception of a bass guitar at the Hop Pole. Some bring several instruments and swap so that the overall sound remains balanced, sometimes even swapping during an ongoing tune.



Figure 4. Swapping instruments during a tune

Choosing sets of tunes

It is typical to sequence several tunes together into a ‘set’. An entire set may be planned in advance, although the choice of the next tune can also be made on the fly providing a further opportunity for improvisation. The ‘right’ to choose the next tune largely resides with the player who initiated the set, but not exclusively. It is not uncommon for others to take up the reins and extend an ongoing set with further tunes. Between two and four tunes per set are common, although longer sets occur, especially when multiple players are involved in choosing new tunes. While the sequencing of tunes does involve musical factors – it is more common to stay within one rhythmic style (e.g. Jig, Reel, Hornpipe), some key changes can sound effective (e.g., minor to major), and some tunes just fit well together – the choice of tunes is also very much a social issue involving several important non-musical factors:

What tunes do the other players know? This is perhaps the most critical issue – guessing which tunes another musician

is likely to be able to play. Obviously, this is far easier when you know them well and much harder if you are a stranger. Our observations showed that players often come as subgroups of friends or family who share sets of tunes in common, while interviews revealed that some groups get together in advance of a session to prepare sets to play.

What is appropriate to this session? Individual sessions are more or less tolerant of varied musical styles (e.g., how narrowly focused on strictly ‘Irish’ music they are). Even if the genre is appropriate, there are clearly some sets that are common to a session and known to regular players. Indeed, a session often begins with these locally ‘well-known’ sets to warm everyone up before moving onto more adventurous and unusual choices. There are more or less ‘standard’ sets that are very widely known to go together, perhaps because they have appeared on popular recordings.

What has already been played today? The pattern of ongoing arrivals and departures of musicians that we noted earlier raises the further challenge of knowing which tunes have already been played as it is generally undesirable to repeat tunes within a session. We saw examples of players at the Hop Pole shouting out ‘yellow card offense’ (borrowing a disciplinary term from Football or Soccer) following a tune that was repeated from earlier on, a humorous but nevertheless clear warning. Even experienced musicians who are very familiar with a session may struggle with this aspect of choosing tunes if they arrive relatively late on.

Building a shared repertoire

In order to successfully negotiate these various social issues (on top of complex musical ones), musicians must build up repertoires of tunes that are shared by others at the session. Players may build up a repertoire over many years and in various ways, learning by ear, but also drawing on external resources such as books, recordings and the Internet as we discuss below. We saw players exchanging CDs and sheet music and recording tunes on phones and portable audio recorders. A common problem is learning the name of a tune and it is frequent to hear the question ‘what was that?’ The problem is that due to the oral tradition of learning the names of Irish tunes are often confused. The same tune can be handed on under different names in different places, while one name may map onto several different variants of a tune, or quite possibly different tunes. Tunes whose real name is unknown may be given temporary placeholder names – after the person who handed it on, for example, which may then be taken as their real names by future recipients. One player learned ‘Dave and Rachel’s Jig’ from another who, it transpires, had learned it from Dave and Rachel. He then passed it on to others before eventually finding out that it is widely known as ‘McGuire’s’.

The use of Gaelic names can add a further set of difficulties and newcomers or visitors to a session need to tread warily, waiting to be invited to lead off a set, as was the case when we visited the Elm Tree. Here we were probed as to

whether we know specific tunes and at one point were asked: “What tunes do you know?” with the addendum of “anything but The Kesh” (a standard tune at which the questioner clearly drew the line).

Paper props and cues

The challenges of building a shared repertoire, of having this to hand, and of figuring out how best to sequence tunes into sets in the heat of a live session, are reflected in the use of various paper props and cues. We observed examples of players discussing and choosing tunes from ‘set lists’ (lists of tunes pre-grouped into sets) and the organisation of these into more extensive personal folders. Moreover, many musicians carry a notebook for jotting down the names of tunes, contacts, dates and locations of sessions and gigs.



Figure 5. A set list (left) playing the dots (right)

We observed a few examples of musicians playing from ‘the dots’, i.e., from printed sheet music. However, our interviews revealed that players were aware that this could be controversial given the perceived importance of the oral tradition in Irish music. One volunteered that, as an accomplished player in a related genre and also a good sight-reader, he was aware of the issue but felt justified in using sheet music as a way of getting up to speed with this particular session. However, use of sheet music was relatively rare and certainly there was nothing like the routine setting up of music stands and use of scores that is commonplace in many other musical settings.

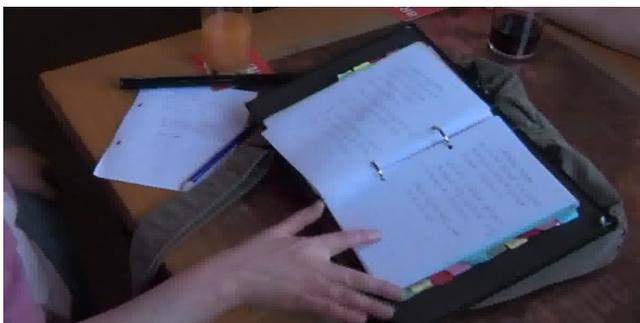


Figure 6. Set lists organised into a personal folder

More widely seen was the use of ‘ABC notation’, a bespoke lightweight notation for traditional music that uses alphabetic letters for note names and other symbols to show bar-lines, octave shifts and so on [1]. Variants of this (often further simplified) are used as a short hand to note down tunes and the notation is promoted by some tutors and Irish musical societies. While much less expressive than standard notation, it works well enough with the relatively standardised form of Irish tunes and is also highly compact

and perhaps less distinguishable from other text and so less overtly visible as a musical score.

A compelling example of the utility of ABC notation was revealed in an interview with one player who described her personal folder of tunes. Her set lists comprised the names of the tunes along with just the first few bars of each in ABC notation: “so I’ve got everything written down with just like the first couple of bars”. It is especially significant here that she only requires the first few bars; the challenge is not to remember the whole tune, but just enough of the beginning to be able to segue into it from another tune, i.e., to remember how to bring it back to the fingers, given that another tune is already in her head. This, combined with the compact ABC notation, meant that she was able to distill the essential information that she required to execute a set of tunes into just a few short lines.

She also revealed the work involved in preparing this highly organised crib sheet and of rehearsing to it: “so when I practice I tend to work off this .. and then I will only go back to the main notes to make sure I haven’t introduced too many variations which sound OK but which aren’t quite right”; “I tend to practice with this and I’ll go through these tunes like these polkas and I’ll mix them up” and “...then I’ve got um like sets of things that I think sounded quite good together”. Finally, it was clear that this player attended several local sessions and maintained different crib sheets for each, reflecting their varying but overlapping local repertoires: “so when I go down the Vat’n’Fiddle I will know the two tunes ... you know ... I’ll have like ten sets of two tunes that I’m confident will go together and that I’ve practiced going from that into that so that I don’t cock it up”.

The moral order of session etiquette

Several of our discussions so far raise the topic of the moral ordering of music-making or ‘session etiquette’ – i.e., what social and musical behaviour is acceptable within an Irish session. We have seen that the kind of tunes and instruments that are welcome at a given session, the question of who begins a set of tunes, and the acceptability of playing to ‘the dots’ may be felt to be subject to a set of ‘rules’, at least by some participants. We directly observed examples of people calling others to account over matters of ‘etiquette’. At one Vat and Fiddle session a group of visitors arrived and played a set of bluegrass tunes, which were politely listened to and greeted with applause, but followed by the question “but is it Irish?”

Our interviews uncovered more serious tales of ‘calling to account’ for using sheet music and playing inappropriate instruments (the use of amplified instruments being especially contentious). While such explicit calling to account may be rare, occurring only when participants feel that the moral order is breached and stands in need of repair [15], it is undoubtedly a serious matter when it does occur, and may lead people to permanently withdraw from a session. However, our study also suggests that there is significant *local variation* in etiquette. Certainly, the four

sessions that we observed varied considerably as to how they were organised and what appeared to be musically and socially acceptable. It is also clear that each session gains a reputation for its flexibility or otherwise with regard to traditional etiquette. Finally, session etiquette is discussed in online fora [e.g., 32] as well as in more formal publications covering topics such as appropriate instruments, choosing tunes, joining in, and the importance of playing by ear [13].

In summary, there would appear to be a high degree of local variation and flexibility of session etiquette – perhaps much more so than books and online discussions would lead one to think – but that at the same time, participants are certainly aware of and influenced by it. Thus, while in practice it may be locally acceptable to get out the sheet music or perform a different style of tune, those doing so are probably aware that they are walking a line. This becomes particularly difficult for two classes of player. First, beginners may feel challenged by session etiquette, especially when they already feel exposed by being less skilful and experienced players. Conversely, it may be much easier to get away with local breaches of etiquette if one is demonstrably an excellent and experienced player, as the quality of one’s playing may outweigh any number of lesser sins. The second challenging situation is when being a ‘nomad’, i.e., when visiting a foreign session, as was the case at the Elm Tree, as there are local variations in session etiquette to contend with and one’s natural level in the musical pecking order is not immediately apparent. In this case even experienced players may feel the need to tread cautiously and there is a sense of gently probing the local rules and being tested out in return.

Online resources

There is a profound tension tucked away in the above observations. In the session itself there is an emphasis placed upon *appearing to be spontaneous*, with a dependence upon a minimal number of props. Yet accomplishing this apparent spontaneity involves a considerable amount of work. Our study revealed a whole constellation of activities that surround the sessions and that feed into the maintenance of this sense of spontaneity. Of particular note here is how Irish musicians have been turning to digital technologies, especially the Internet, as a means of building up their repertoire. Beyond the use of cameras and phones and exchange of CDs noted previously, we learned of a dedicated website for Irish musicians called ‘The Session’, established around 2002 to support the exchange of tunes and information about sessions. In its own words: *“The exchange of tunes is what keeps traditional Irish music alive. This website is one way of passing on jigs, reels and other dance tunes. Some of the tunes are well known, and some are more obscure. It’s this mixture of the familiar and the new that makes for a good session.”* [www.thesession.org, August 2010].

The core service provided by The Session is to enable its members to transcribe tunes into both standard and ABC

notations and share them with others. Members can also comment on tunes, adding notes on tune names, variations, alternative keys, ways of playing, where the tune has been recorded, and other tunes that fit well with it. Tunes are searchable by name, type, key and who submitted the transcription, and members can bookmark their favourites to create personal and publicly visible tune lists. Members also upload information on recordings (album names, artists and track lists) which are cross linked to transcriptions where available. There is also a searchable database of sessions that includes name, location (country, city, map reference), day and time, organizer or venue contact details, and comments on style, skill level, and the quality of the beer. Three of the four sessions that we studied appeared on The Session as follows:

- **The King Billy (King William IV):** “This is the regular Thursday night session that has moved from the Mechanics. Good pub with wide selection of real ales. Parking OK and good bus connections.”
- **The Vat and Fiddle:** “Session is every second Sunday of the month. Starts around 2.30 until about 6. Mostly traditional British Isles music with some American old time too.” “Friendly pub just round the corner from the Railway Station.” “New Musicians Welcome”
- **The Elm Tree:** “Very friendly session, with excellent musicians and a good choice of beer.” “The Monday session is usually faster than the Tuesday one. The Monday session is actually the former Colpitts session.”

The Session therefore offers an extensive, cross-indexed and evolving database of tunes, sessions and players that has been crowd-sourced from the community. The site currently claims over 63,000 members, a database of over 9,000 tunes, and information on over 3,000 recordings and 2,000 sessions worldwide.

The screenshot shows a web page for 'The Maid Behind The Bar' on thesession.org. At the top, there are tabs for 'Details', 'ABC', 'Sheetmusic', and 'Comments'. The main content area is yellow and contains the following information:

- The Maid Behind The Bar**
- reel**
- Key signature: Dmajor
- Submitted on May 25th 2001 by **Jeremy**.
- This tune has been added to 1433 tunebooks.
- Also known as The "Made Behind The Bar", The Babe Behind The Bar, The Barmaid, The Green Mountain, The Haymaker, Judy's, Little Judy, Little Judy's, Maid Behind The Bar, New York.
- Recordings of a tune by this name:
 - 40 Years Reunion by The Dubliners
 - A Dance Visit To Ireland by McCusker Brothers Ceilidhe Band
 - A Small Island (Traditional Music From Cork) by Brid Cranitch, Vince Milne And Pat Sullivan

Below this, there is a section titled 'Maid Behind The Bar' with a red header. It contains the text: 'In Ontario old-time fiddling circles this tune is usually called "Judy's Reel" or "Little Judy's Reel". It's in 1000 Fiddle Tunes under that title. The "B" part also turns up as the third part of the French Canadian reel "La Ronfleuse Gobeil" (Snoring Ms. Gobeil)'. It is dated 'Posted on February 4th 2002 by Ian'. At the bottom, a note says: 'IN the details section you might find that its also called "The Green Mountain", (See Mike McGoldrick Album Morning Rory). However, The Green Mountain is a different tune!'.

Figure 7. A selection of notes on the tune “The Maid Behind the Bar” from thesession.org [August 2010]

Irish musicians have also been turning to more mainstream services. YouTube videos of tunes being played fast and slow were reported to be a useful resource for learning, and are also embedded into more specialist sites. Facebook hosts pages for sessions, and we observed people posting to indicate their plans to attend on a particular day. More

recently, mobile applications have emerged to support Irish sessions including Tunepal, an iPhone app that maintains personal tune lists along with sheet music or ABC notation, connects to well known online repositories of tunes such as thesession.org, makes audio recordings, and contains tune-recognition software that attempts to recognize which tune is being played based on a musical analysis of the audio recording, although this is difficult to do reliably for some instruments and in the noisy environment of a live session.

BRIDGING PREPARATION AND PERFORMANCE

It seems then that Irish musicians are increasingly turning to digital resources to help them prepare for sessions, but that deploying these within the actual performance of a traditional session can be tricky due to the prevailing social and moral ordering of traditional music-making. Indeed, the effort put into carefully designing the current paper cues reveals some of the complexities inherent in this challenge. We might imagine several potential technologies to help with this bridging between preparation and performance, from extending emerging mobile phone apps with functionality for sharing repertoires, recommending tunes on the fly, or providing minimal cues to help musicians segue between tunes, to enhancing the physical objects that are already present at the session – instruments, musical accessories, pub paraphernalia, and paper – with digital resources. Ongoing work is exploring these various options through a participatory design process. What we *are* able to propose in this paper, based on our study, is something of the general design context for these new technologies. Specifically, we articulate a guiding design principle that we call ‘situated discretion’.

Situated discretion

The success of any particular approach to design in this context, or indeed any combination of approaches, will largely depend on how well it respects the moral ordering of traditional Irish music sessions and the prevailing ‘session etiquette’. This moral order is not an addition to the social organisation of music-making or any other activity. On the contrary, the social order *is* inseparably a moral order, the social organisation of interaction a moral organisation. The moral order constitutes the ‘seen but unnoticed’ foundation of interaction in real time [15]. While a great many novel solutions might be introduced into the setting, we need to be respectful of the moral character of traditional work practice then.

This means that technological interventions will only be realised if they can be appropriated in suitably *discrete* way with respect to ‘session etiquette’. What makes the use of one technology more discreet than another? Is interacting with a phone in a session more discreet and therefore acceptable than using augmented paper or vice versa? Our study reveals that general mobile phone use appears to be acceptable within many sessions as a regular pub activity and so mobiles *might* prove to be a good option. However, might more musically oriented phone apps then come to be seen more like electronic instruments than social tools? We have seen that paper cues can be carefully constructed so as

not to appear too much like musical scores. However, will further extending their functionality draw more attention to them to the point of breeching etiquette? Will extending the use of paper draw attention to what is already perhaps a somewhat risky practice?

The key to resolving such questions lies in understanding how the social accomplishment of a session is situated within the particular setting of a pub. As we have already pointed out, a session is a long way from being a concert. Instead at least as much of what’s going on is about it being in a pub as anything else. There’s drinking, chatting, clowning around, people turning up together and going together, disappearing off to order drinks, and so on. The use of mobile phones, or indeed paper, to support these everyday activities may well be acceptable and any new technology that could be interpreted in this way may prove to be sufficiently discrete. In short, what we are arguing for is not only discretion, but rather *situated discretion*.

This point about situated discretion is very much in line with the vision of ubiquitous computing in which digital technologies become embedded into the everyday physical world so as to better support people’s practices and tacit knowledge, ultimately becoming unremarkable or even ‘invisible in use’ [34]. One common kind of vision for accomplishing the invisible in ubiquitous computing is to embed sensors and tags in the existing environment so that the technology is apparently hidden in what is already there. The difficulty is that invisibility is not something that just happens by virtue of hiding technology in existing materials. These materials still have to be situated *in accountable social interactions*. As we pointed out above, the problem with paper, for all its apparent diversity and pervasiveness of use [24], is that, in pub settings, musicians are already struggling to make the paper disappear. Thus, when one looks at the broader sets of practices surrounding pub-going and social ‘get-togethers’ there are numerous ways in which getting out a sheet of paper or opening up a notebook may be a *more visible* practice because it is out of the usual run of things for such settings.

What then of the alternative approach of developing mobile phone apps? Mobile phones were observed to be a natural part of the ecology of the pubs that we visited. Many musicians carry them and were observed breaking off and checking their phones during sessions in the same way that they broke off playing to talk to someone, head to the bar, or engage in any other normal pub activity. Might phone use in pubs, be seen as more unremarkable than using sheets of paper? The very multipurpose nature of the phone may lend to this. Someone using a phone could be engaged in many activities, checking for text messages for example, which is perfectly acceptable in the context of an Irish session. It may be difficult to tell what someone is doing when twiddling with their phone and generally not polite to look too closely. Thus, there is a degree of ambiguity about the use of a mobile phone in this context that may allow for multiple interpretations of what is going on, offsetting a

‘calling to account’ that would otherwise result in a ‘loss of face’ [2]. Of course, this depends upon whether new apps to support sequencing transform phone use into something that is visibly different from normal phone use and clearly concerned with supporting recall and improvisation, in which case situated discretion may be lost.

In short, being invisible is not an immutable property of a given technology but is fundamentally concerned with how the technology is situated by the people who use it, and how it is situated turns upon the social and moral ordering of the activities it will be embedded in. When we look to the social and moral ordering of Irish music sessions – when we look to see how they are *made* into traditional activities that technologies are situated in – we see elements of the ‘making’, of the interactional assembly and conduct of the music that are amenable to discrete interventions.

Support for sequencing tunes

Having said something of the general design approach, we are also able to comment on the requirements for future technologies to support Irish sessions; that is based on our study, we can recommend generally what they should do. While some challenges such as building a repertoire, becoming skilled on an instrument, and learning how to adjust one’s playing to that of others, are common to many forms of music, others are more distinctive to this particular form. In particular, the challenge of sequencing tunes into sets lies at the heart of the Irish session and would appear to be especially tricky for some players. Sequencing is not only a musical challenge of knowing which tunes fit together; it is largely a social challenge of determining what others might know and what it is appropriate to play as a session unfolds. This brings it squarely into the focus of CSCW and it becomes interesting to ask what technologies might support Irish musicians in sequencing tunes? Based on our study, we suggest that the challenge of sequencing needs to address several more specific requirements:

- understanding which tunes might fit together musically
- providing sufficient cues that players can easily segue from one tune to the next when playing a set
- knowing who is present at the session
- knowing what tunes these others might know, including which are sufficiently rehearsed to be at their fingertips
- knowing which tunes have been played so far
- knowing which tunes are popular at this session;
- finding out what a particular tune is called

These problems are especially significant for two classes of participant: learners with relatively small repertoires who may be nervous about making gaffes, and newcomers to a given session who are unfamiliar with its shared repertoire, history and etiquette, including visiting nomads.

Earlier on, we suggested some general technological approaches to meeting these requirements and it is to these that we now return in order to conclude this current topic of

discussion. In each case, the general aim is to better bridge between the work of preparing for a session, which is already relatively well supported by technology, and the actual situated practice of performing in the session which by and large, is not. We identify three broad approaches for achieving this bridging and in particular for supporting the sequencing of tunes.

Extending mobile services: while there are already ‘apps’ aimed at Irish musicians, these tend to focus on supporting the individual musician in managing their own tunebook, rather than supporting social aspects of sequencing. There would appear to be opportunities for extending such apps to enable attendees to locally broadcast their presence, exchange tunebooks, and compare repertoires, including rapidly highlighting tunes that they know in common. An further extension would be to support noting which tunes get played at the session, creating a record of what has already been played that day, and adding to longer term records of sets that have proved popular on previous occasions. These records might be shared among mobile apps or posted to current online social networking sites where they could be followed up after the session.

Integrating physical and digital. An alternative strategy would be to enhance the physical resources that musicians already employ, enabling them to be more closely and dynamically integrated with online resources. Ubicomp technologies might be used to tag notebooks, music cases and other paraphernalia with the identities of their owners, enabling them to easily ‘sign in’ to a session, identifying them to others and leaving a record that they were present. Similarly, tagging individual sheets of paper or pages in books with the names of tunes might help construct records of which tunes were played that day. Various tagging technologies could be relevant here from RFID to barcodes and glyphs that might be printed onto paper or even stickers to adorn and personalize instrument cases.

Involving spectators: A challenge for both of these approaches is that Irish musicians are already busy trying to manage the complexities of recalling and actually playing tunes in the moment of the session, which may restrict their ability or motivation to use mobile applications while they play. While tune recognition software may improve in the future, an interesting alternative would be to draw on knowledgeable spectators. Perhaps there is a role for those who are attending to listen to also help document the session and bring their interest and expertise to bear? Perhaps taking a more active role in this may even enhance their enjoyment of the session? We therefore propose exploring the potential for ‘spectator interfaces’ that are targeted at listeners rather than players and that engage them in documenting and discussing the activities of the session. These might even extend to other bystanders in the locality who are not familiar with the music but would like to learn more about what is happening.

SOME BROADER IMPLICATIONS FOR DESIGN

Beyond support for Irish music session, our study speaks to a wider and growing interest in collaborative music technology. One body of work has focused on the design of instruments, either enhancing traditional instruments (e.g., augmenting violin bows [5]) or employing emerging gesture recognition and tangible interface technologies to create new kinds of instruments, for professional musicians [21] or to support collaborative music making by non-experts [6]. Closer to our focus, a second body of work has considered technologies to enhance the coordination of musical performance ranging from augmenting conductor's batons [23] to attaching displays to instruments or stands so that performers can better follow dynamic scores [14]. This interest in coordination has also extended to studies of improvisation [7, 8, 10, 22, 30] and technology support for this [19, 29].

Like this previous work, our study has also considered the collaborative production of improvised music. However, in our study, the essence of improvising lies not in soloing or harmonizing on the fly, but rather in the act of sequencing – i.e., choosing and ordering sequences of tunes to be performed in a particular order. What is challenging here is that this is a distributed ad-hoc process that relies on tacit knowledge rather than explicit negotiation. Thus, we highlight the sequencing of music as an important aspect of collaborative improvisation and stress the need for new and distinctive kinds of collaborative musical interface to provide lightweight support for people to dynamically share repertoires and create sequences of tunes or songs. Our study also reveals how such technologies need to extend to support the work of preparing for a session as well as following up on new tunes and contacts afterwards. This requires bridging the dynamic aspects of sequencing within the session and online resources and social networks that support preparation and follow up.

We propose that there are opportunities for sequencing interfaces beyond our immediate focus on Irish sessions, for example in other kinds of jam sessions (folk and blues), karaoke, and also the sequencing of tracks by DJs. By highlighting sequencing, our study also relates to earlier studies of how consumers share and synchronize playlists of recorded music in social settings, for example at parties [12] or as part of everyday life [4, 26, 33]. It appears that sequencing playlists is an important way in which non-musicians can engage in a musical expression, suggesting further opportunities for interfaces to support improvised collaborative sequencing. Conversely, there is a sense that our Irish musicians are also sharing playlists, but in this case with a view to performing them live. It seems then that the socially negotiated act of sequencing may provide an interesting point of contact between the production and consumption of music, suggesting that technologies that support sequencing may ultimately have a wider appeal.

We have described how Irish musicians carefully design paper cues to enable them to bring the learning that they do

outside of the session into the actual practice of the session without compromising the etiquette of 'playing by ear'. We have argued that new technologies need to be sensitive to etiquette and context while recognising that this may be an extremely subtle matter. Our final contribution in this paper is therefore to further emphasise the need for CSCW to look at traditional social practices as deserving of study and technology support while also raising important new challenges concerning etiquette, ubiquity, discretion and the complex boundary between the physical and the digital. Indeed, researchers have already begun to explore technology support for various other traditional social practices such as knitting [27], preparing food [18, 31], and religious observance [17, 35, 36], all of which may provide further opportunities for exploring the general approach of situated discretion.

CONCLUSIONS

We have documented key features of the traditional Irish session as a situated collaborative activity; sessions take place within pubs, they have fluid temporal arrangements, and they involve spectators in various ways. An especially salient feature is the way in which groups of musicians improvise together by sequencing known tunes into sets, a process that relies on tacit knowledge of which tunes others may know, which have already been played, and which are appropriate for this particular session. Underpinning this is a strong sense of etiquette which frowns upon the use of amplified instruments or the overt use of musical scores. At the same time, we have also seen how Irish musicians are turning to the Internet to support them in preparing for sessions, and how they carefully design paper props to help them bring this preparation to bear within the session itself without flouting etiquette.

An exploration of potential technologies to support collaborative sequencing stressed the importance of designing for 'situated discretion', that is for discreet use with respect to session etiquette within the context of a pub or bar. We conclude by suggesting that collaborative sequencing may be important for other forms of social music production and consumption and so warrants further attention within CSCW. Finally, we argue that CSCW should focus on supporting other kinds of traditional activity by bridging between burgeoning online resources and the subtleties of situated social practice.

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