PROMOTING THE MUSIC, HISTORY & STUDY OF THE BAGPIPES

PIPING TODAY

BAGAD Cap Caval
A year of glory for the Breton band

Life and times of the ‘Lowland’ pipes
Pete Stewart

Spirit of Scotland Pipe Band
A story worth the telling

Iain Dall MacKay’s Chanter
Ancient intonation and the sharp ‘D’
Alisdair McLaren
New director for the NYPBoS

The piper & the poet
Thomas Tully and Sir John Betjeman

Scottish Traditional Grounds
Tulloch Gorm

Canadian Women’s Army Corps Pipe Band
‘Athene’s pipers’ made history

Youngstars
NYPBoS newsletter No. 35

February / March 09

PRICE - UK £3.30 • EUROPE £5 • CANADA AND USA $6.50
Affirming an ancient intonation

BARNABY BROWN

THERE is a track on Lismor’s 1989 Piobaireachd album of the renowned Iain MacFadyen playing the piobaireachd The End of the Great Bridge that Barnaby Brown — then a young music student at Cambridge University — found himself unable to appreciate.

“I hadn’t played the pipes for 10 years,” he said. “To my ear at that time in my life, the D on that recording sounded sharp.”

Barnaby Brown graduated and became increasingly interested in the history of Scottish music and of piping.

“I ended up measuring Iain Dall MacKay’s chanter from the late 17th century and taking a great deal of time and trouble with pipe maker Julian Goodacre to reproduce it, and bless me, what did it give me… a sharper than ‘normal’ ‘D’. The Iain Dall MacKay chanter, without any shred of doubt, plays a ‘D’ that is every bit as sharp as Iain MacFadyen’s was on that CD.

“So we have this chanter that was made in the 1680s or 1690s, and played by Iain Dall MacKay, and it has a fourth that is sharper than the perfect fourth we all like these days. And it’s sharp, not just with one ‘D’ fingering, but with all three of the different fingerings for ‘D’ that have ever been recorded in Highland piping… all produce a sharp ‘D’. We’ve done a considerable amount of experimentation with different reeds and huge staples and owe a particular debt of thanks to Tommy Johnstone and Ronnie MacShannon of EzeeDrone for going to such trouble with reed experimentation… but it’s quite clear: Iain Dall played with a sharp ‘D’.

There are no ifs or buts about it.

“And, if Iain Dall MacKay played with a sharper ‘D’ than we favour today, then the chances are that so did Patrick Og and Patrick Mor and Donald Mor MacCrimmon.

“So,” said Barnaby Brown, “I’ve spent the best part of a year trying to convince myself that actually, yes, I do like this ‘D’… that, if it was good enough for Iain Dall, and if it was good enough for Patrick Og, then it’s got to be good enough for me.”

An interesting flicker of light was cast on the historical ‘D’ of the great Highland bagpipe by the musicologist and harper Peter Greenhill, of the most dedicated scholars occupied with unraveling an enigmatic early 17th century manuscript of ancient bardic harp music. Around 1613, a young harpist from Anglesey, Robert ap Huw, penned a transcription of some of the music he was studying. Even then, this music was considered ancient. His manuscript was to become the only surviving remnant of a repertoire that once held the Celtic world in thrall. Peter Greenhill began working on the

PIPING TODAY • 26
interpretation of Robert ap Huw’s manuscript in 1972 and, by 2000, had produced a monumental dissertation, deposited at the Centre for Advanced Welsh Music Studies at the University of Wales, Bangor.

Said Barnaby Brown: “It just so happened that, in the course of a telephone conversation, Peter told me that one of the pure tuning procedures he’d proposed for the Robert ap Huw manuscript was similar to the traditional bagpipe scale, with a fourth and seventh sharper than ‘pure’ (i.e. consonant with the drones). He had looked into a number of possible tunings, and assessed how relevant each one might be, based on the distribution of fifths in the manuscript.

“Medieval Europe inherited a philosophy from ancient Greece, that intonation should be fixed by mathematical ratios. The ideas of these Greek ‘Harmonists’ were spread by the late Roman scholar, Boethius, in a book that was probably read by Latin-speaking scholars in Ireland and Scotland: De Institutione Musicæ. All though, theory and practice are two quite different things. It is now accepted that intonation has more to do with culture, perception and nurture than with mathematics.

“The intonation of Highland bagpipes today is essentially ‘Just Intonation’ — the notes are generally tuned to be ‘pure’ with the drones,” said Barnaby Brown. “Pure intervals were also used to tune the harp, and in his Ancient Music of Ireland (1840), Edward Bunting tells us that they had a ‘drone bass’ string, known as the crònan, sounding an octave below two ‘sister’ strings that were tuned to a unison — just like the drones of a Highland bagpipe. There are different routes to tuning the harp from the ‘sister’ strings using pure intervals, however, with very different results. If you progress by fifths and fourths, the result is what’s called ‘Pythagorean’ tuning.

“The trouble with Pythagorean tuning is that the thirds and sixths sound horrible. In some medieval music, thirds and sixths are noticeably scarce in the harmony, which suggests that those composers did favour ‘Pythagorean’ tuning. However, British musicians were particularly fond of thirds, and early music groups — like the Hilliard Ensemble — generally find ‘Just Intonation’ more satisfactory. Like most modern Highland pipers, they strive to achieve perfect acoustical consonance, or the locking of harmonics.

“But, from the Renaissance to the 19th century, the most popular type of tuning in Europe was ‘Meantone’ — a family of tuning systems where priority is given to beautiful thirds,” said Barnaby Brown. “What’s not often understood is that, on a piano or digital keyboard — any instrument, in fact, that’s been built to equal temperament — none of the intervals are pure.

“In an orchestra, wind players will ‘lip’ notes up or down to create a pure interval, but if you are a xylophone player or a pianist, you are stuck.

“The result is a lot of fuzziness in an orchestra in terms of intonation,” he said, “and that is part of the package. On the bagpipe, we’re much more particular. There’s a lower tolerance, at least today, of beating or uneasiness, partly because you can hear it so clearly. It’s the same on a wire-strung harp: if two strings are not exactly pure, the interference beats that cause the sensation of dissonance are clearly audible.

“What I’d never realised, before this conversation with Peter Greenhill, was that there’s not just one form of ‘Just’ tuning, but a great number of possibilities. Working from first principles, he’d come up with six that might be appropriate for the Robert Ap Huw manuscript. One of these, he’d noticed, was just like the Highland bagpipe scale measured in 1953 by Seumas MacNeill and John Lenihan: its fourth and seventh (‘D’ and ‘G’) were distinctly sharp.

“That for me was an amazing moment: the penny dropped. I thought, ‘Ah, this means that Gaelic pipers and Gaelic harpers might have shared similar intonation values.’ Perhaps there wasn’t the clash of cultures we have today: look at advertising for the R. T. Shepherd and Sons’ Orchestral Chanter: ‘At last! A pipe chanter that other musicians will love’.

“But the tuning issues that we face today when pipers work with other musicians in the Gaelic tradition may not have existed in the 17th century,” said Barnaby Brown.

“I don’t believe a repertoire with the epic splendour of piobaireachd would have been isolated from, or immune to cross-fertilisation with the Gaelic harp and song traditions. It is at least possible that the blind harper of Dunvegan, Ruari Dall Morrison, and other great musicians of Gaelic culture, used an intonation that was sympathetic with what the MacCrimmons held to be ‘good’.

“This prompts a somewhat revolutionary idea: if pipers, harpers and fiddlers playing together today want to be more in tune, then rather than dilute the tradition, homogenising with the rest of the planet, why not tune to the old bagpipe scale? Pianos have pulled us into Equal Temperament; the only way pianists can say ‘no’ to this aspect of globalisation is to use a keyboard that lets you set the temperament. Equal Tempera-
ment gives you 24 keys, all equally out of tune," said Barnaby Brown. “It’s not a tuning that makes any sense for traditional music, which uses a fraction of these keys. Why sacrifice the beauty of a pure D major chord for the sake of an F sharp major chord that’s scarcely ever used? I am convinced that traditional music would benefit from the use of Meantone and Just tunings, particularly ‘Greenhill 2’,” he said, “which is so strikingly close to the traditional pipe scale (see Table 1).

“The seven-note scale of the harp and bagpipe contains six triads which can be tuned pure: three major chords and three minor chords. On the pipe (as written) these are: G major, A major, B minor, D major, E minor and F sharp minor.

“In conventional Just intonation, all six chords are pure; I call this ‘Greenhill 1’, as it’s the first of the Just tunings which Peter Greenhill explored as possible solutions for Robert Ap Huw’s music. In ‘Greenhill 2’, only four of these six chords are pure; B minor and D major are slightly dissonant. This adds a certain potency because some chords have a different character, a feeling of restlessness or instability, which enables you to return ‘home’ to serene purity, stillness. It gives you another way to shape the music, to change the mood. This dimension of musical contrast was fundamental to composers before the nineteenth century, but is an aspect of music we are now desensitised to.

“Unequal tuning systems supply a polarity, a light and shade, between chords. For example, ‘Greenhill 2’, offers a restless D major and a tranquil A major. This is not relevant to every type of music, but might be extremely relevant and enriching to old Gaelic melodies and — why not? — new ones composed exploiting the qualities of an unequal tuning,” said Barnaby Brown.

“Intonation fundamentally affects the choice of notes in a composition; if one chord or note sounds blissfully pure, another achingly restless, then the composer will use them in different ways. This is completely lost on the piano, as all chords are an equally-good compromise. We should have more courage about asking musicians who work with pipers to consider tuning to the pipe scale (or more practically, to ‘Greenhill 2’), rather than it always being the piper who adapts to other musicians.”

Barnaby Brown points to the tromb (Gaelic) — the ‘trump’ or ‘Jew’s harp’ — as a possible explanation for the historic tuning of ‘D’.

“On a trump, you’re basically playing overtones and, as you go up the harmonic series, you find you are playing the pipe scale, except that the ‘D’ is significantly sharper, even than on the Iain Dall chanter, at 551 cents: that’s 53 cents sharper than a pure perfect fourth,” he said… “but bear in mind that theory doesn’t correspond with practice and cents values have to be taken with considerable leeway — plus or minus five, or even 10, cents.

“The science of sound is full of traps for the unwary,” he said.

“Until I read about mode locking, I had presumed that stretched harmonics, or ‘inharmonicity’ within the drone spectrum, would influence chanter tuning — and that this would vary from pipe to pipe… but not so. Although I was correct that the harmonics making up the colour, or timbre, of drones are not perfect multiples of the fundamental frequency, mode locking means that the chanter sounds pure at the theoretical values of the drone harmonics, rather than at their actual (stretched) frequencies, which are often as much as 20 cents higher. That really did my head in.

“I was also confused by trump tuning. The trumpet’s natural overtone might be sharper than you want to hear but, just as a trumpet player will ‘lip’ a note into tune, so a trump player can modify the intonation, to an extent, by altering his mouth.

“Intonation is a complicated thing,” said Barnaby Brown. “You’re really dealing with culture and the human mind, as much as with acoustics. Evidence of historical intonation is always problematic. With a pipe chanter, you can always adjust the intonation by scraping the reed in particular ways and we can’t rule out the possibility that Iain Dall applied a bit of beeswax here and there. All we do know is that he never under-cut any of the holes: they’re all beautifully sharp-edged to this day. The ‘high A’ hole is even angled towards the foot of the chanter, giving an acute corner that would have been tempting to under-cut, had its player ever been bothered by a flat ‘high A’.

“And it wasn’t just Iain Dall: that chanter was clearly played over several generations and none of its players ever took a knife to the holes. That’s significant. It could mean that intonation tolerance was higher, that people accepted a wider range of tuning; or that they were more skilled with reed manipulation and achieved their goal that way.”

BARNABY Brown teaches “world musics” at the Royal Scottish Academy of Music and Drama in Glasgow and, for his third-year Bachelor of Education students, he arranges various workshops. One was with the Javanese gamelan: a tuned ensemble of various metallophones, drums, and gongs.

“And so began a wonderful voyage of discovery with Gamelan Naga Mas (Golden Dragon),” he said. “The great thing about gamelan, is that it’s often pentatonic and shares a similar musical mentality to piping.

“It’s mesmerising, I found that by putting tape on a couple of holes, I could tune my Harish Mohome ‘A’ chanter to the gamelan scale and begin improvising. We had a development weekend and gave a premiere in May last year in the beautifully-refurbished Eden Court Theatre in Inverness, then at the Kibble Palace for Glasgow’s West End Festival, and again at the Edinburgh Mela.

“Playing pipes with gamelan is lovely; it’s like playing with an orchestra — even nicer,” he said. “There’s a deep cultural sympathy and the sound quality complements the pipes perfectly. It feels very appropriate; everything just seemed to work.

“With gamelan, you have a very small number of notes being used, usually repeated in cyclic patterns, with temps that ebb and flow. This puts you in a similar sound world to piobaireachd. What is great is the way it’s built up, with many layers of sound combining in complex cycles to create a hypnotic and deeply beautiful texture.

“In Java and Bali, every court has its own gamelan, each subtly different from the others. Great care is taken to tune the instruments within each gamelan to each other, but you encounter substantial differences — or intonation dialects — once you start moving from one court to another. I wonder whether we had a similar situation in Scotland with the intonation of the pipes, where you would recognise a piper by his distinctive intonation… something which we’ve almost entirely lost. Before mass production and greater homogeneity in bagpipe sound, intonation played a much more powerful role defining an individual piper’s aesthetic.

“A sharper intonation on ‘D’ and ‘G’ is the norm on recordings of John MacDonald of Inverness, Willie Ross and Donald MacLeod. When we hear their distinctive scale, is it fair to say, ‘that’s out of tune,’ or has fashion in
intonation simply changed? Is piping any more refined today?

“The way I overcame my prejudice, winning at a sharp ‘D’, was through Norwegian folk music.

“In Norway, young musicians are positively cultivating not only sharp fourths but neutral thirds and sixths, and colourful sevenths as well. The authorities recognised that old intonation dialects were endangered, and started encouraging them in competitions, with the result that young singers and instrumentalists are now proud of what used to be regarded as uncool.

“I wonder if that could ever happen in Scotland. Would we, as a community playing ancient bagpipe music, want to reinstate a sharp ‘D’ for the sake of sounding special, or true to the past?

“Or are we better off staying with the norm we’ve moved into since the 1950s?

“There’s a big difference between a perfect fourth — 498 cents, or 2 cents below Equal Temperament — and the fourth you hear recorded at the 1999 Edinburgh Festival by Willie MacDonald of Benbecula, or that of Iain MacFadyen.

“The colourful ‘D’ is still within living memory,” said Barnaby Brown, “but are any young pipers keen to resurrect it?

“Will it have died out completely in 25 years’ time?

“Or could it be cherished again, the wheel of fashion turning full circle?”

Scottish traditional grounds

PART 1: Tulloch Gorm — 1011

ALL musical traditions draw on the principle of cyclic structure, particularly those transmitted orally. Scotland is no exception: its ceòl beag and ceòl mòr traditions are each built on the idea of variation. Elements of the first musical segment recur in following segments, forming a procession of corresponding periods that revolve like days, months, or years — never identical but with a cyclic pattern.

The wheels of renewal, or partial repetition, can turn rapidly (every 2 bars in 'Tulloch Gorm') or slowly (every 32 bars in big laments). There are often two or three wheels turning simultaneously, at different speeds. Some cycles pause, allowing for arefreshing digression, but generally at least one continues turning throughout. This uninterrupted cycle is called a ground, and while we are accustomed to using this term in ceòl mòr, it also frequently

Example 1. Donald MacDonald (Edinburgh 1817) Instructions for the Great Highland Bagpipe, p. 6. The contrasting harmonic element ‘O’ is highlighted, showing how the melody is underpinned by a repeated ground. Facsimile at www.piobaireachd.co.uk/MacDonald Instructions.htm

Example 2. William Gunn (Glasgow 1848) The Caledonian Repository of Music, adapted for the bagpipes, p. 4. In Highland bagpipe music, it is common for the contrasting elements of grounds to be inverted; instead of 1011, the repeated cycle here is 0100. From a facsimile of the 9th edition (1886) published by The National Piping Centre (2003).


PIPING TODAY • 44
underpins light music ‘Parts’. Grounds serve a threefold purpose: to help the performer compose or remember the music, and to help the listener appreciate it.

In this series of articles, I focus on the most significant grounds in the traditional bagpipe music of the Scottish Highlands and Borders. My selection criteria for a ground are:

1. **Popularity**: how often was it used?
2. **Stability**: how stable was its form?
3. **Distinction**: how different is it from other grounds?

Trying to categorise traditional grounds is rather like looking at a rainbow: where does green end and blue begin? Each has variants that blend seamlessly into others. A perennial spirit of renewal has made them multiply to form a single, interwoven complex. The categories I have chosen, therefore, have more to do with educational expediency than absolute truth. Although to some extent simplistic, I hope they help to deepen appreciation of the range of traditional music which Scotland possesses, and how this music fits into the wider European picture.

I begin with ‘Tulloch Gorm’ (Example 1) because this melody epitomised Scottish taste: it was held up as the antithesis of the latest wave of musical fashion rolling out across Europe from Italy. John Skinner (1721–1807), an Episcopal minister in Aberdeenshire, wrote six verses to it, including:

What needs there be sae great a gush
Wi’ dringing dull Italian lays,
droning
I wadna gie our ain Strathspeys
For half a hunder score o’ them;
They’re dowf and dowie at the best,
Dowf and dowie, dowf and dowie,
Dowf and dowie at the best,
Wi a’ their variorum;
They’re dowf and dowie at the best,
Their allegros and a’ the rest,
They canna’ please a Scottish taste
Compar’d wi’ Tullochgorum.

This melody was described by Robert Burns as ‘the best Scotch song Scotland ever saw’. The ground underpinning it, however, belongs to a wider cultural area. In the seventeenth century, it was as Welsh or English as it was Scottish. The only uniquely Scottish feature of this ground, arguably, is the occasional inversion of the contrasting harmonic units 1 and 0, illustrated by Example 2, turning the pattern 1011 into 0100. This inversion transforms the
music, dramatically changing its "bliss or 'taste': both the weight of the melody and its ending now lie on a more dissonant, restless sonority, thanks to the drones sounding on A.

There is no firm evidence that musicians outside Scotland shared this predilection for dissonance. The problem is that drone pitches are hardly ever specified in the sources and have become obscure because these piping traditions died out long ago. A case in point is William Dixon's manuscript (Example 3). Many of his variation sets would sound dissonant if interpreted from a Highland piping perspective. The Scots, English and Welsh evidence (represented here by Examples 4–9), however, suggests that Dixon may have retuned his drones from A to G. This would give these tunes a restful quality, rather than the tense character of Example 2.

Example 8 shows a selection of Welsh 'measures', or harmonic grounds. These formed part of the syllabus for music exams and competitions in the fifteenth and sixteenth centuries and are from a list of 24 measures, all of which end on I (or k for 'kyweirdant').
Theoretical treatises suggest that ceòl beag embodies the qualities of stability and resolution, contrasted by ceòl mòr (or t for tyniad), a unit of departure from the ‘home’ sonority. This sets Welsh musical tradition apart from Highland piping, as in many fine examples of ceol mòr and ceòl beag, sonic tension is the fundamental quality. It also shows up as unsatisfactory the term ‘double-tonic’: there are never two ‘tonics’; rather, one harmony is the light, the other the shadow cast by the presence of the drones.

There are striking parallels, nevertheless, between the Welsh measures and Scottish tradition. The measure ysgwirin—1011:1011 (Example 9), for instance, is identical to the ground of ‘Tulloch Gorm’. A shared Irish ancestry seems likely, given the following account by Gruffudd Hiraethog, a sixteenth-century Welsh historian. In his Llwyg Drysiant (c.1561), he states that these measures were ‘drawn out from music at the request of four master musicians of the harp and crwth, each one contributing his knowledge and genius, in order to compose music, to remember it, to perform it correctly and to classify it… And through the unity and mutual advice of those wise teachers and the art of the doctor of music… were created twenty-four measures…

The oldest example of 1011 that I have found is the stately Spanish dance, ‘Pavana de Alexandre’ by Alonso Mudarra (Example 10). Here the ground would be more accurately represented as 1012, and I couldn’t exclude the possibility that the relationship is coincidental. These variations for early guitar are anything but primitive; they extend each unit of the ground to three bars, forming a monumental elaboration of a simple cyclic structure. This is exactly the spirit of ceol mòr.

I am grateful to Peter Greenhill for comments on an earlier draft.

Bibliography


Example 8. Measures of cerdd dant (‘craft of the string’) in the hand of a Welsh bardic patron, c.1480. These are nos 19–23 in the earliest surviving list of the 24 measures:

\[
\begin{array}{cccc}
[m]\text{ak y mwn byr} & [\text{br}]\text{yt adidoc} & [\text{trw}]\text{gel hir} & [\text{ma}]\text{k yn maen} \\
\text{kktkkk} & \text{tttktt} & \text{kkktkkk} & \text{tttkkkkk} \\
\text{ttttkkkk} & \text{kktkkk} & \text{ttttkkkk} & \text{kkkkkkkk} \\
\text{ttttkkkk} & \text{kkkkkk} & \text{ttttkkkk} & \text{kkkkkkkk}
\end{array}
\]

Example 9. In his harp tablature of 1613, Robert ap Huw used two chords to illustrate the 24 measures on page 34: C major (2nd inversion) and B flat major (root position). In musical works, each digit typically has more length and harmonic elaboration. Works on the measures ysgwirin—1011:1011 and mak y mwn byr—11011111 are listed on page 109. From www.pbm.com/~lindahl/ap_huw/ (MS Add. 14905).