

Pipe Harmony
by Larry Samuels

The best way to start this article would be with a sound clip of a pipe choir in full voice, playing a 3- or 4-part chord, perfectly tuned and balanced, with rich harmonies filling your body with vibrations, sounding like a heavenly choir, like a flourish of trumpets announcing the creation of the universe! Lacking that - you'll have to take my word for it, and read this article!

In this article, I'm going to give a basic description of harmony, enough to understand how it applies to the pipes. I'll mention various issues with harmony on the pipes and describe the usual harmony "seconds" that we find in traditional tunes. Then I'll discuss some of the more adventurous pieces that have been written in the last fifteen years, talking about the techniques used to create the harmonies we find there. I'm not going to be speaking in terms of chord progressions, but rather in terms of the techniques used to create harmonic interest.

Finally, I'll mention some things which you might **not** want to do (I call this "Avant-Garde Pipe Harmony"), as well as adding some ideas for composers and arrangers to use in their pieces.

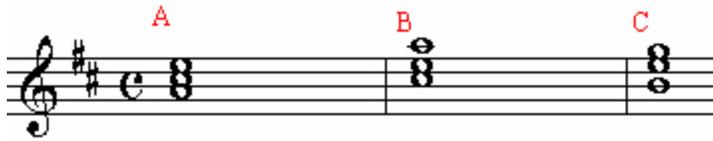
Intro to harmony/Music Theory

(I'll use only piping notes and chords for examples, to keep things as simple as possible). Traditional Western music theory bases harmony on 3-part chords (triads) made of intervals of thirds. Without getting too deeply into music theory, the basic triads are:

- a major triad (like A-C#-E) where the interval from the base note to the note above is a major third, and the next interval is a minor third
- a minor triad (like B-D-F#) where the interval between the base note and the note above is a minor third, and the next interval is a major third.
- a diminished triad (like C#-E-G) built on two minor thirds

(There is one other basic triad, the "augmented" triad, but since the 9 notes of the pipe scale do not allow us to construct it, we'll leave it out.) When talking about a triad like A-C#-E, the C# is called the "third", since it's a third above the base note, and the E is called the "fifth".

The only other point of basic theory to know about is the idea of "inversions".



Example 1

Consider the A major triad (example 1A and 1B above): with Low A as the lowest note played as shown in example A), this triad is in “root position”. If the chord is played with the third (C#) as the lowest note (example B), the triad is in "first inversion". If a chord is played with the lowest note being the "fifth" of the triad (example 1C), the triad is in "second inversion" (note I had to use a different chord here, E/B/G, since the A major chord could not be shown, given the chanter scale).

Due to the 9-note scale of the pipes, there are relatively few chords that can be formed, since most end up as inversions of another chord. Inversions do seem to have a psychological effect, but it's hard to state positively what these effects are for all people. Western classical music will often use the inversion of a chord to give an ending a “not-quite-finished” feeling, with the genuine ending occurring with the chord in root position.

Issues With Pipes

The nature of the GHB raises some issues:

1. As mentioned above, the fixed 9 notes of the pipe scale result in being able to form relatively few chords, since many end up as inversions of other chords
2. The drones provide a constant low A that is added to any harmony. Psychologically, a held note (like the constant A of the drones) "falls out" of the consciousness to some extent (but not completely), while attention is directed (sometimes purposely) to the moving notes. Still, the drone's A makes an audible contribution, especially when added to a chord with a low G or B. The drones can be stopped, but this is probably only useful where other instruments are present to add desired harmony.
3. The piping scale - in the pipes, we often have notes which differ from the intervals that Western music would expect. The chanter D is the most notable example; in the past, the chanter D has been quite sharp to the "usual" D. Other examples are the F (really F#) which is flatted somewhat in practice, and the high A which ranges from quite flat to "almost there". Differences in the chanter scale can lead to a different sound in the harmony than might be expected; a D major triad with a high D and low F would sound unlike the usual bright major triad, since the D-F# is not a major third anymore.

In my opinion, the pipe scale has been changing in recent years to more closely reflect the notes we're used to hearing in Western music. This seems most noticeable in pipe bands, especially in tunes like hornpipes, often centered on D and involving many D-F# harmonies.

4. Volume - the chanter scale is louder at the bottom and quieter at top. A person arranging harmonies for a tune needs to take into account the balance of sound - if the harmony notes end up lower than the melody notes, you may want fewer pipers playing the low harmony, so the melody can be heard.
5. Timbre – since a pipe band has no other melody instruments, it can be difficult to hear a separate ‘voice’/harmony part as an individual part, unlike a symphony orchestra, where timbre separates the strings/winds/etc. If voices (harmony) change in the same rhythm, it may sound like block chords rather than separate voices.
6. The practice chanter - many practice chanters do not have a true chanter scale. In addition, as many pipe bands know, few practice chanters have the same scale! Trying to practice harmonies in the situation is frustrating, but you can do your best and get an idea of what things will sound like.

Basic Pipe Harmony

The most familiar form of pipe harmony can be shown with an example we all know, "The Green Hills of Tyrol". Here the pipe corps plays the first 8 measures in unison. Then, as these bars are repeated, some portion of the pipe corps plays notes a third below the melody; when this isn't possible, they may play a third above, or in unison with the melody.

Note: the harmony part is usually called "seconds" because it's a 'second' part (even when they're playing in intervals of thirds!). Pieces with more than two parts usually refer to Piper 1/2/3/4, or something similar.

This basic example brings up some interesting points:

1. The listener first hears the melody in unison, and nothing but the melody. This lets the listener know what to listen for when harmony is added. If you start right off with harmony, it can be unclear (especially with the volume differences in the notes) just what to listen to as the melody.
2. When using harmonies, bringing the pipe corps back together in unison, can be effective. Everyone returning to low A (as in Green Hills, part 1, measure 8) can give a sense of closure. But note how part 2 continues the harmony all the way to the end; nothing wrong-sounding there either. Often unisons end up being used by default, when the harmony goes too low or high for the pipe chanter. (A sudden transition from rich harmony to perfect unison can be very dramatic. Some of the multipart pieces discussed below contain examples of this.)
3. An alternative to playing a third below can be to play a third above. In my experience, it's rare to find a tune doing this consistently; the tune "Balmoral" (first 8 bars) comes to mind (see the Shotts and Dykehead album "Caledonia Pipe Band").



Example 2

This is the beginning of the repeat of the first 8 bars (the melody is the lower part); the harmony is added on the repeat. Harmony a third above the melody has a different effect than a third below; often the listener perceives the highest note as the melody, so consistent harmony a third above can change the character of the tune drastically.

Even in this tune, in the second (high hand) 8 bars, the harmony goes to a third below, because there's no room a third above on the pipe chanter.

4. Instead of playing a third, we may end up playing a "sixth", like high A and C#, high G and B, etc. These are just thirds turned upside down, but they have a very distinctive sound on the pipes, due to the often-thinner sound of the high A and/or high G. In my opinion, the high A of a pipe corps, since it often "falls out" against the drones, makes a C played against stand out in a very strong, expressive way - the listener knows the melody has taken them to a high A, but the C# is much more prominent with its strong major third and volume component. B and high G can have this same effect, while low A and F not so much (due to the increasing volume on the F) and low G/E providing a very different kind of sound due to the drone's low A contribution.

Advanced Pipe Harmony

Most traditional settings rarely venture beyond the "thirds above/thirds below" approach described so far. And there's nothing wrong with that - most pipe tunes are so major-scale oriented that they lend themselves to the simple harmonies provided by thirds.

In recent years, pieces with multiple parts and more innovative harmonies have begun to appear. Examples that may be familiar to folks are "Journey to Skye", "Mists of Time", "Steam Train to Mallaig", "Murray's Fancy", "Hellbound Train", and others. Many of the pieces have a richly-harmonized slower portion, and faster parts that may add less-dense harmonies. They tend to use chord inversions routinely, and to branch out in terms of harmonies used. I'd like to examine some of these pieces and illustrate some of the newer harmonic ideas employed.

The Mists of Time

This piece by Mary-Anne McKinnon (see Field Marshal Montgomery's album "Debut" for the full version) is a densely-harmonized suite for the pipes, essentially a slow air with variations. After each variation, the piece returns to a statement of the theme before going onto the next variation. (Although the piece begins and ends proper with a solo piper playing an Urlar, we'll disregard that to look at the harmonies.)

The piece starts with an 8-bar phrase accompanied by a harmony part (not shown). Here three pipers play melody to one player playing harmony - this gets the theme across to the listener without confusion, but with strong harmony still heard. These 8 bars are repeated (Example 3) but the 4th player (who was doubling the theme) instead plays an obligato part made up of broken/arpeggiated chords, copying the underlying harmony of the first 3 parts but providing aural interest to vary the listener's experience.

The image shows two staves of musical notation. The top staff is labeled "Piper 1" and the bottom staff is labeled "Piper 4". Both staves are in treble clef with a key signature of one sharp (F#) and a 6/8 time signature. The top staff contains a melody line with eighth and quarter notes. The bottom staff contains a broken chord accompaniment consisting of eighth and quarter notes.

Example 3

Measure 4 (Example 4) of this obligato shows an F# in a descending scale against a held high G in part 3; this is a "minor second", a discordant interval.

The image shows two staves of musical notation. The top staff shows a descending scale of eighth notes: G4, F#4, E4, D4, C4. The bottom staff shows a held high G4 note in the third part, which is a discordant interval with the F#4 note in the top staff.

Example 4

Here the combination of volume on the low B (in Piper 1, not shown), with less volume on the high G, makes this "passing note" F# palatable, adding a little unfamiliar spice to the mix, even as it goes by too quickly for the listener to tell what's happening.

The first variation (Example 5)



The image shows two systems of musical notation. Each system consists of two staves. The top staff of each system contains a sequence of notes, primarily eighth notes, with some quarter notes. The bottom staff of each system contains a sequence of notes, primarily quarter notes, with some eighth notes. The notes in the bottom staff are positioned such that they are often a third above or below the notes in the top staff, creating a 'thirds' effect. The notation is in black ink on a white background.

Example 5

uses the interesting device of playing thirds, but alternately above and below the melody part. This provides more aural interest than the typical all-above/all-below method. Since the "above/below"-ness is continued through each 6/8 measure, the listener is surprised by the jumps, then comes to expect them at the end of each bar.

Bar 7 (Example 6) of the first variation also shows something new: parallel 4ths in the chanter parts.

Piper 1



The image shows a single staff of musical notation. It contains a sequence of notes, primarily quarter notes, with some eighth notes. The notes are positioned such that they are often a fourth above or below the notes in the previous bar, creating a 'parallel 4ths' effect. The notation is in black ink on a white background.

Piper 3



The image shows a single staff of musical notation. It contains a sequence of notes, primarily quarter notes, with some eighth notes. The notes are positioned such that they are often a fourth above or below the notes in the previous bar, creating a 'parallel 4ths' effect. The notation is in black ink on a white background.

Example 6

To Western-trained ears, 4ths and 5ths are often considered an "open" sound and are avoided in traditional harmony, especially when moving from one 4th (or 5th) to another, called "parallel fourths (fifths)". Here we see high A/E to E/B and back again. These "open" intervals (including the drone low A against B/E, providing another fifth!) are resolved to a nice A-C#-E major triad in the last measure (C# is in piper 4, not shown).

The second variation (Example 7)

Piper 1



Piper 3



Example 7

The image shows two staves of musical notation. The top staff is labeled 'Piper 1' and the bottom staff is labeled 'Piper 3'. Both staves are in the key of D major (one sharp) and 4/4 time. The notation includes treble clefs, key signatures, and various note values (quarter, eighth, and dotted notes). The bottom staff features a prominent drone bass line with a low A note. The two staves are connected by a brace at the bottom, indicating they are parts of the same musical example.

doesn't show much new in the types of harmonies used, but shows "contrary motion" between the melody and harmony. As the melody plays E-LA-E, the harmony "bounces" in a different direction: LA-C-LA, etc. Again, this provides variety to the listener. In fact, bar 7 (not shown) allows the piper 3 part to play a slightly different rhythm : even 8th notes against a dotted rhythm in the other parts.

Melodically, note how variation 3 (Example 8) is just an "elongation" of variation 2. But as movement slows down in Piper 1/2/3, Piper 4 breaks into arpeggiated chords in 16ths, adding motion plus harmony.

Piper 1



Piper 4



Example 8

The piece ends with a return to the original 8 bars that started it; still retaining harmony but with piper 4 returning to play and strengthen the theme, instead of pulling the listener's attention away with his moving obbligato. This brings the listener full circle, music-wise. (As written, the piece concludes with piper 4 playing a portion of the Urlar that begins the piece, really bringing the piece full-circle.)

Journey to Skye

This piece is by Donald Thompson; one performance is on the album "78th Frasers In Ireland". This free-form rhapsody, written by a jazz musician, shows some very interesting harmonic uses. After a statement of the slow theme by a single piper, the entire pipe corps comes in with the same theme, harmony added. In bar 1 (Example 9),



Example 9

the moving melody notes are "anchored" by a low A in the harmony part. In the second measure, we have the Low A/E fifth broken as the top part descends to low G (followed

by B/D), all against the A of the drones. Harmonically, we're hearing G/B/D against E, supported by the drone A – deep stuff! And then everything resolves simply to C#, for a nice major triad. Tension/resolution – that's the name of the game in harmony.

Example 10 shows bars 6 and 7 after A in the printed music:



Example 10

Here we see some very noteworthy techniques. First, the band 'spreads' into a High A/E/C chord, gradually (see "The Torrey Pines", later, for another example of this technique). The motion of the pattern High A/G/A, E/D/E, C/B/C draws the listener's attention to the fact that something is happening in contrast to the previous held note. Just adding the chord notes (for instance, just playing E instead of E/D/E) can be less "attention-getting" due to the single timbre of the pipes.

The final High A/E/C chord rolls down into high G/D/B in the next measure, followed by a little-used triad – the LA/C/F chord. The triad that begins on F# (that is, F#/A/C#) does not seem to occur often in my experience; more typical would be Low/D/F#. Here the music fairly shines, as the high G chord changes briefly to this unusual F#/A/C# triad, then back again.

The entire passage from A onwards is a marvelous example of a pipe corps starting from rapid unison passages, segueing into 3-part harmony on the held notes (Example 10, first bar), then moving on, using a grand 3-part harmony that really sings out.

Three bars before C (Example 11):



Example 11

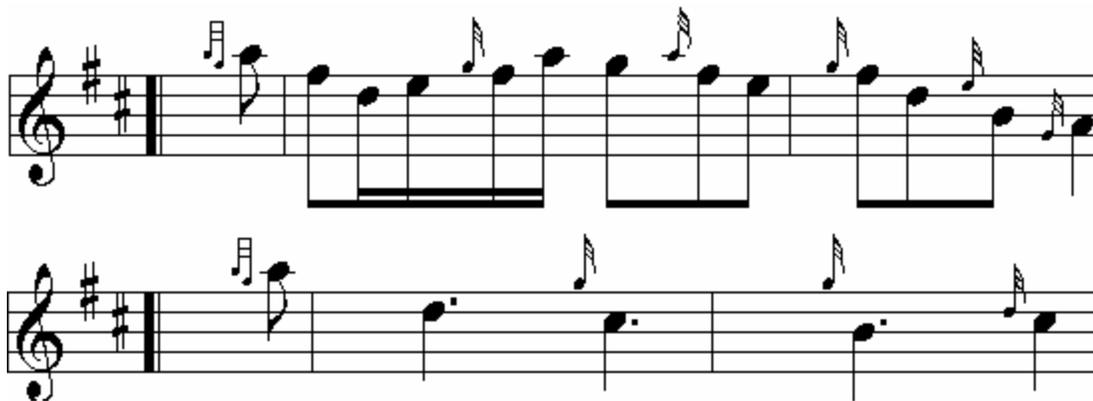
the upper part leaps to the high A while the lower part ends up anchoring the sound with a nice fat C, then spinning its way down to a nice unison low A.

This piece is another good example of the dramatic effect achieved by alternating harmony with a sudden and unexpected unison, particularly in portions where only the pipe corps is playing.

Murray's Fancy

This suite, written by Mark Saul, is played on many of the Victoria Police Pipe Band albums. The album "Uphold the Right" contains a pipe/drum version, without any extra instruments (e.g., synthesizer). This suite is a set of variations of a basic melody: slow air into waltz with harmonies, restating the slow air in full harmony and turning into a hornpipe, also partly harmonized.

After the statement of the slow air, a trio of pipers plays the opening strains of the waltz; then the entire pipe corps joins in on a variation of the waltz, 24 bars worth. The first 8 bars are played twice while different forms of harmony are added. First (Example 12) is a simple harmony with little motion to it (mostly held dotted 8th notes, against 8ths and 16ths in the melody).



The image shows two staves of musical notation in G major. The top staff contains a melody consisting of eighth and dotted eighth notes. The bottom staff provides a harmonic accompaniment with held dotted eighth notes. The notation is presented in a standard musical score format with a treble clef and a key signature of one sharp (F#).

Example 12

Note the broken F-D-B in the top hand, against a low held B in the harmony, as always with the A of the drones contributing. This is a good chance to hear this chord, and get a sense of its aural effects.

When the 8-bar theme is restated, the harmony becomes much more active, becoming a counter-melody of its own (Example 13):

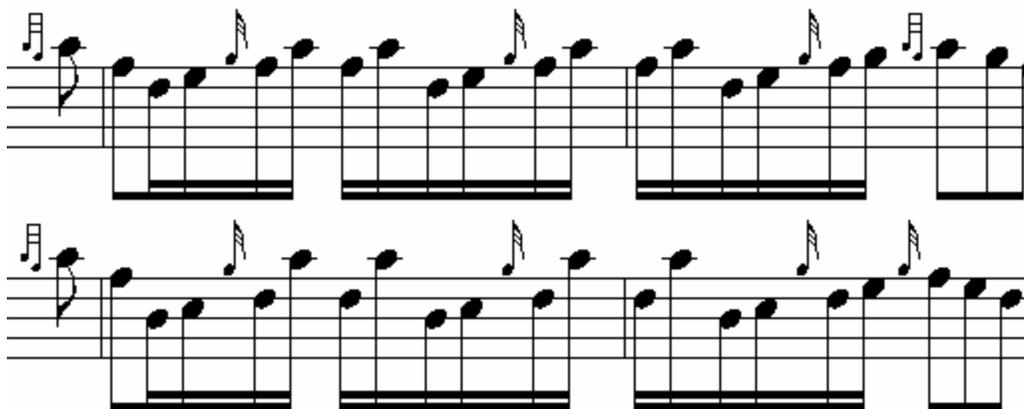


Example 13

It's not as attractive a melody as the top part, but note two things: the contrary motion (when the top part ascends, the bottom part descends and vice versa), and when the top part holds for a quarter note, the bottom part draws attention with moving 16ths. This is a good example of drawing the listener's attention back and forth between melody and harmony, using motion of the notes.

The pipe corps then plays a passage in 16ths, with harmony(Example 14). Two things to note here:

1. while most of the harmony is just of the "3rd below" type, the pipe sections plays unisons on high A and high G.



Example 14

This breaks the pattern and gives more interest to the passage.

2. In measure 5 of this part (Example 15)

2. These rich chords are followed by some very open parallel 5ths – Low A/E to B/F, back to Low A/E (see the above example). This "openness" contrasts severely with the preceding chords. The name of the game is, always make it interesting for the listener, and Mr. Saul does a great job here.

4. Measure 4 (Example 17)



Example 17

shows audible contrary motion in the two parts, with the lower hand rising from Low G as the upper descends from high G.

4. The last measures of this slow passage (Example 18):



Example 18

has an A/E/high A (a very open sound) descending one step to G/D/high G (against the low A of the drones), then finally resolving the tension as the lower hand gives low A/F, to give the "tonic" chord of D/F#/A. Again, the high hand doubling of the lower G/A is very effective and interesting.

Mr. Saul uses an accelerating passage of 16ths (based on the original slow air) to carry the band into the hornpipe version of the tune. The first 4 parts are your standard hornpipe parts; following this the band adds some harmony parts. From our point of view, this is the type of harmony we've seen before, mostly harmony a 3rd underneath the melody. But look at Example 19, as Mr. Saul uses a 5/4 measure to pause the band for a moment, and give a big cadence with D/high G to E, finally resolving to the tonic for D/F#



Example 19

Following this momentary pause, he gives a final flourish, alternating melody notes with high A's to give a big finish to it all.

The Torrey Pines

This is a 9/8 air by Charlie Rosenberger, PM of the Cameron Highlanders of San Diego, CA. In it, he uses contrasting unisons versus "builtup" 4-part chords, as follows:

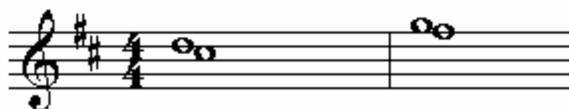


Example 20

Here, each bar has the band initially in unison, but when the melody reaches the 2nd group of 3, the band spreads out into a 4-part chord, which is held into the 3rd group of three, then the band returns to unison on the last 8th note before the next bar. The harmonies employed are basic: measure 1 has LA/C/E/HA, measure 2 and 3 have E/C/HA/LA, measure 4 gives B/HG/D/LG. But the attraction of this tune lies in the "spreading" feeling of the harmony; at first the listener hears the melody note; then there's something added, then something more, then something more. The 4th measure, besides providing the changed harmony, ends up using a low G as the last note, with the volume of the note really penetrating.

This piece shows the appeal of "building" harmony, as well as the aural change when you return to unison notes.

Avant-Garde Pipe Harmony



Example 21

Don't ... just don't, OK? Please? Well, maybe in passing; see the examples in "Mists of Time" and "Murray's Fancy" above.



Example 22

A band I was in used to play this chord on purpose in one of their pieces, for laughs. I'm no longer in that band. These facts are related. -)

Ideas for composers/arrangers

A number of ideas mentioned earlier may be of use to you if you're trying to prepare harmony parts, or build them into your composition:

1. contrary motion, or different rates of movement in the harmony (slower/faster)
2. sudden shifts into harmony or unison
3. Voice "location"- in Tchaikowsky's 6th Symphony (the Pathetique), the 4th movement is a slow adagio, where the melody/harmony shifts from 1st violins to 2nd, then back again, each measure. Yet it reaches the listener's ear seamlessly integrated as one mass of sound. Some conductors deliberately move the 2nd violins to the other side of the hall, to allow this "alternation" to come through.

Now in the usual pipe band circle, this idea may not help so much, but in concert position (semi-circle, facing forward) perhaps it could make an effective idea. But many concert halls "smear" and blend the sound of a pipe band to a great degree, so it's hard to tell if this idea would have any effect.

4. Volume control: although we have no real volume control, a chanter swung into the body will be muffled to some extent. Perhaps this technique could be used to effect a "crescendo" by bringing chanters out from a somewhat muffled position to a clear sound.
5. Notice how many of these pieces involve solo pipers, or small groups, along with the full pipe corps. This varies the quantity of sound to provide interest.
6. Classical music is often analyzed in terms of the harmonic progressions. Simply laying out even the basics of this is beyond the scope of this article, but I'd like to mention some ideas for folks who may know about this.

Many pipe pieces can be reduced to simpler I - V - I progressions. Classical music often uses I -IV - I progression, or can substitute related minor chords for a major (a iii chord in place of V, a ii chord in place of IV). Sometimes a piece will seem as if it's going to resolve to the tonic chord, but instead uses the related minor vi chord - this gives an "unfinished" minor sound, often followed by repetition that ultimately resolves to the intended tonic. Perhaps progressions like this could be used to provide harmonic variety;

the progression themselves might even govern the development of the melodic line. Chord progressions that end up in unexpected places may lead to more extended musical pieces, as sequences are repeated, first with a 'false' finish, then with a genuine finish on the tonic.

The fact that our chanter scale is not a true major scale has some effects, though. Consider A major - the V chord is really a 'v' chord (minor) and the related iii chord (C#-E-G) is a diminished triad - with the low A of the drones, you'll really get a A7 chord that usually wants to resolve to D/F#/A.

7. Inversions: classical composers would often end a section on an inversion of a chord, to lend a slightly unfinished sound, and ultimately close things out without inversion, with the tonic as lowest note sounded. With our 9 note chanter scale, it's hard to be too flexible with inversions, but I mention the idea here for some possible use.

8. We saw, in "The Torrey Pines" above, the idea of "expanding" from unison into a chord, gradually adding notes. Consider the reverse: "contracting" from a full chord, little by little dropping notes, till you get back to unison. Due to the volume of the pipes, the listener might not quite be able to tell what was happening the first time; they'd listen all the harder if/when it was repeated.

9. Variety - fool the listener. If they expect a repeated version, vary it, keep their interest up! Pipe tunes can be so predictable, if you're not careful. Keep 'em wondering what you're going to do next!

9. A while back, 'alternate' notes like C-natural and F-natural were popular. What the heck - try them in harmony, if you have the nerve!

10. Consider the idea of harmony in gracenotes. Although single gracenotes go by so quickly that any harmony may not be heard, perhaps a small number of pipers deliberately making big, fat gracenotes could achieve an effect that would be heard.

11. Consider the form of your piece when adding harmony. Note how many times pieces start out with simpler harmonies, becoming more dense till some richly-harmonized center, then simplify again at the end (or eliminate harmony altogether).

Conclusion

Pipe harmony is a broad subject, even with our limited scale; this long article can't touch on all of it. I hope this article has given you some knowledge to understand better what you're playing and hearing, and given you some ideas for what to do when you arrange harmonies. Good luck!

Larry Samuels is a Grade 1 piper in San Diego, CA. He'd like to say "Thank you" to all the composers of the music mentioned in this article for sharing their beautiful pieces with us all. Oh, and he adds, "Please write more!"