HARMONY PRELIMINARIES

3) INTERVALS AND CHORDS

We need to learn how to calculate, or recognise, any interval used in music. Let's have a try at naming the interval between F# and Db, shall we? Fear not, I'm not even going to try. Why not? Because there is no possible key that can contain both these notes. We'll start with something easier, and what you need to learn in any case: what do we call the intervals from the tonic to the 2nd, 3rd, 4th, etc. notes of the major scale? Learn this, because it is the basis of everything else:

Taking the scale of C major,
From C to D is a major second
From C to E is a major third
From C to F is a perfect 4th
From C to G is a perfect 5th
From C to A is a major 6th
From C to B is a major 7th
From C to C is a perfect octave.

(If you go further, as C to D a ninth higher, you get a major 9th. And so on for the other intervals. It is generally easier to reduce compound intervals back to the basic octave, for definition purposes.)

From the above list, you can see that the 4th, 5th and octave are called perfect, and the others are major. Of course all these names apply to any major key; I could have said "From doh to ray is a major second", and so on. OK. But how do we calculate say, E to G, within the key of C? The answer is that intervals are not defined according to what key they are in, they are taken in abstract. So we come to the first rule:

Rule 1. Always calculate upwards, using the lower note as the tonic of a major key.

This means that to calculate E to G we must think in terms of the key of E (four sharps). Care is needed here, because although E to G is clearly some kind of third, a major third above E would be G#. So we don't yet know what to call this interval. (Now if it were Eb to G….)

Let's go back to the scale of C and try some inflected notes: what are C to Eb, C to F#, C to Ab?

Rule 2. A perfect interval is called diminished when shrunk by a semitone, and augmented when so increased.

Right, well, we can't do C to Eb or C to Ab yet, but we can see that C to F# is an augmented fourth.

Rule 3. A major interval is called augmented when increased by a semitone, minor when it is shrunk by a semitone, and diminished when shrunk by two semitones.

Let's just check that. So C to E is a major third, C to E# is an augmented 3rd, C to Eb is a minor third, and C to Ebb is a diminished 3rd. (Agreed that some of these will not arise in practice.)

Right, now the two intervals we just needed to name were C to Eb – that's a minor third, and C to Ab, that's a minor 6th. Right, but note well that if we call the Ab G# we no longer have any kind of 6th; it's now a 5th, and an augmented one at that. *Be careful not to make incorrect enharmonic changes when calculating intervals.*

Inverting intervals. (moving the lower note up an octave). Do intervals change their names when inverted? Oh yes, of course. C to E is a major third, E to C is of course a 6th, because we calculate upwards. In the scale of E (four sharps) we would expect to come to a C# (major 6th) so our C natural must give us a minor 6th.

Fine, but there's an easier method lurking nearby. When you invert intervals, the following happen:

1) 2nd becomes 7th, 3rd becomes 6th, 4th becomes 5th, - oh, just subtract the number from 9.
2) Major becomes minor and vice versa, augmented becomes diminished and vice versa, perfect remains perfect.

Let's try a few out.

Minor 3rd becomes major 6th
Augmented 2nd becomes diminished 7th
Perfect 5th becomes perfect 4th
Diminished 6th becomes augmented 3rd.

A while back we were asked to calculate E to G. It's a minor 3rd of course. We could get it the primary way by calculating up the scale of E major and then adjusting. You might find it easier to work by inversion: G to E is a major 6th (in the scale of G). Inverting it gives the answer minor 3rd nicely.

One more: what is Fx to B (this occurs in the scale of G# minor.) Calculating from the scale of Fx major is impossible; F to B is a fourth, so the answer must be some kind of fourth, but…

Two ways out of this: 1) invert, giving B to Fx. In the key of B (5 sharps) we get F# as a perfect 5th, so B to Fx is an augmented 5th. Inverting back, we have a diminished 4th as the answer.
2) Mentally transpose both notes down a semitone (F# to Bb) or even two semitones (F to Bbb) and see if that is easier.

Consonance and dissonance
Lastly, you need to know that the following intervals are classed as dissonant (unpleasant, or requiring resolution): All augmented and diminished intervals, all 2nds and 7ths.
All perfect intervals, major and minor 3rds and 6ths are consonant.

(The perfect 4th is actually a hybrid case: you will learn about it later.)

CHORDS

A chord is a conglomeration of at least three different notes sounded simultaneously, and regarded as an entity in its own right. The traditional way of constructing chords has always been that of adding intervals of a third to a starting note called the root. So, starting with C as a root, we can have:

C E (not yet a chord, just an interval)
C E G – a three-note chord is known as a triad. A triad with a major or minor 3rd and a perfect 5th (like this one) is known as a common chord.
C E G B is known as a 7th chord, for obvious reasons. A 7th chord with a major 3rd, perfect 5th and minor 7th (not as here) is known as a Dominant 7th chord. (G B D F in this key).
C E G B D is a 9th chord, for continually obvious reasons.
C E G B D F is an 11th chord
C E G B D F A is a 13th chord
C E G B D F A C comes full circle and so is not considered.

It must be pointed out that chords with more than 4 different notes are discordant to one degree or another, and that usually involves leaving some of the lower notes out, especially in 4-part harmony.

(You can't leave out the top note or it wouldn't qualify for its name.) So we might have G B F E which is an incomplete, but perfectly usable Dominant 13th chord. Good luck.

NAMING CHORDS
Chords can be named as above, using the scale degree names:
1 Tonic
2 Supertonic
3 Mediant
4 Subdominant
5 Dominant
6 Submediant
7 Leading Note

plus the defining top extension (7th, 9th etc.) if any.

You need to learn what type of chord each of these is, in the major and minor keys respectively. You *should* be able to work these out for yourself, but I'll do it anyway, and you can just confirm that you understand why.

Major key triads
1 Tonic is major. Abbreviated as I
2 Supertonic is minor. Abbr. ii
3 Mediant is minor. Abbr. iii.
4 Submediant is major. Abbr. IV
5 Dominant is major. Abbr. V
6 Submediant is minor. Abbr. vi.
7 Leading Note is diminished. Abbr. viiº.

Minor key triads
1 Tonic is minor. Abbreviated as i.
2 Supertonic is diminished. Abbr. iiº
3 Mediant is augmented. Abbr. III+.
4 Submediant is minor. Abbr. iv.
5 Dominant is major. Abbr. V
6 Submediant is major. Abbr. VI.
7 Leading Note is diminished. Abbr. viiº.

This Roman-numeral method of naming chords is pretty universal, though the upper and lower case distinctions for major and minor aren't always made. In any case, always be sure you know what kind of chord you are using. Play it on the piano if necessary. Years ago a professor suggested these helpful "meanings" to the four types: Major = Happy. Minor = Sad. Diminished = Dramatic. Augmented = Mysterious. That may help you.

When you are sure you have mastered the three Pre-harmony chapters, you are ready to study harmony.

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