

The Guide formerly known as the Ravenspiral Guide an informal guide to music theory as it relates to composition

containing all that is worth knowing about anything musical*

even more formerly known as the Raven's Spiral Guide to Music Theory

Version 0.8.1 (August 2012)

This guide is a work in progress and is perpetually unfinished.
Much like the art of music itself.

For news and feedback, see the KVRAUDIO thread:

<http://www.kvraudio.com/forum/viewtopic.php?t=162135>

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** eventually, i.e. by the time v1.0 is done*

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Preface

With the abundance of free music software on the Internet, be it open source or just the sort you're not made to pay for, and the ready availability of music-making apparatus available at reasonable prices on eBay, there ought to be a free and relatively comprehensive guide to composing music in this day and age too on these, our Interwebs.

It was true when I wrote that many years ago, and possibly still true now. So welcome to the Guide Formerly Known as the Ravenspiral Guide: a freely available online resource for tune-bangers without formal musical training who want to know more about music theory – without the history lessons, staff notation, and so on.

The difference between the Ravenspiral Guide and a formal music theory course is that I'm not a music teacher. I won't try to make you use any of the knowledge in this book "properly". I have no way of typesetting music notation nicely so I won't use it - I don't need it to explain what I'm going to explain. All you want is a way to play in my diagrams and charts on a polyphonic musical keyboard of some sort. Or an old piano. Or a piano accordion. Whatever you have.

The style is informal. I'll introduce you to useful music theory concepts without boring the piss out of you or wasting your time; i'll try to consolidate commonly discovered musical knowledge with more esoteric stuff; i'll showing you the sense behind the strange naming conventions of chords; i'll explain things as simply as possible, or half-explain it and leaving you to discover the rest yourself; mostly, i'll drop more useful knowledge on you than you can immediately assimilate, then refuse to make sense of it for you. Take these trinkets and make of them what you will.

The musical repertoire of the people who actually compile music theory books is mainly restricted to fairly respectable kinds of music such as classical, jazz, funk, blues, pop, country and rock. There's this weird, pointy-nosed academic taint to them which bothers me. None of them write electronic dance music, which in my experience does have its own interesting (they might say "naive") musical conventions and has had them for several years. There's always a gap to be bridged.

As for guides written by people into electronic dance music? They tend to go off into the technology of making music and keep the music theory part way too basic so as not to overwhelm. Hence, dubstep.

Typically, both of the aforementioned groups of people usually want you to buy their knowledge in the form of a book, subscription or downloadable video. I put this guide out for free because the information in it is too useful for me to want to restrict it.

Nuff polemic, then: who am I to declare this is how things are to be done?

My name's Simon. I stuck this knowledge together from my own musical experience going from Octamed Pro 1.0 on the Amiga 500 in 1991 up to writing orchestral game soundtracks in 2012, filled out with good stuff from various books and websites. (The best and most remarkable have been assembled in the bibliography and further reading section.)

This guide kicked off way back in 2002 when a good comprehensive music theory guide for people who couldn't read music (and didn't want to) was sorely lacking. It's now 2012, and the Scribd version of the Ravenspiral Guide comes up second in a Google search for "music theory", so I suppose I must be doing something right.

Incidentally, this guide will probably never be finished or ready for paper publication, though i'm amenable to the idea of it being a free eBook. There will always be errors, omissions and complete nonsense somewhere in this guide.

So then, on with the info.

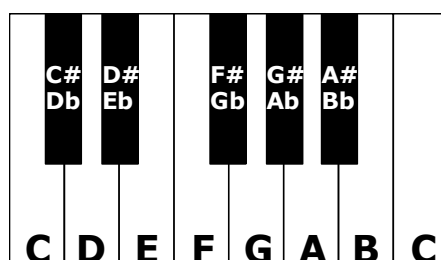
Basic notations

As promised, i'm going to use non-standard but easy to understand notations for the music in this guide. They're non-standard because of necessity: you need to understand what i'm talking about, and I don't want to typeset standard notation either.

Notations

One sort of notation i'm going to use should be immediately familiar, the other perhaps not so. There will also be some jargon words involved, but i'll explain those as we get to them. First off, **notes**:

Real notation



Here's a diagram of which notes are which on a standard issue piano keyboard—should you need it, of course. The black keys are in bold and white keys are in normal type. And no, i'm not sure why A's in the middle either. In one single octave from C to B there are 12 notes, and i've included the C at the top end to make up thirteen notes to annoy the superstitious.

And now for (whole) **tones** and **semitones** - also known as steps and half-steps respectively.

Between C and C# is the distance of one semitone, because C# is one note up from C. There's no note between C and C#¹. Between C and D there is a distance of one whole tone because C is two notes away from D (counting C# of course). Between E and F, however, there is the distance of a single semitone, not a whole tone since there's no black key between them. The same goes between B and C. From D# to F is the distance of one whole tone, because between D# and F is E.

From D to F is three semitones. From C to E is four semitones. From C to G is seven semitones. From C to the C above is twelve semitones. Count them yourself if you don't trust me. In fact, i'll do it for you.

Start at C and count upwards by semitones, then.. C# makes 1, D makes 2, D# makes 3, E makes four. F makes five, F# makes six, G makes seven. G# makes eight, A makes nine, A# makes ten, B makes eleven, C makes twelve. Voilà.

Sharps and flats are the next port of call. C# is one semitone up from C. If you sharpen C, therefore, it becomes C# (pronounced C sharp). Db is one semitone down from D. If you flatten D, you end up with Db (pronounced D flat). So in music, to sharpen something is to raise it by a semitone, and to flatten it is to lower it by a semitone. The usual sign for a flat is \flat and the sharp is usually notated with \sharp , and in their place i've used b and # respectively to save typesetting time.

Sharps and flats are sometimes known as accidentals, which i find somewhat pejorative considering that when a note is neither sharpened nor flattened it is called a natural note. The musical symbol for a natural note is \natural , and it's used in common musical notation where a note should be played unaccidentalated where it's otherwise been established that it should be played either sharp or flat. Note its hidden potential to be a subliminal Schutzstaffel logo. I have no handy ASCII equivalent of the natural sign and shan't bother using it.

¹ This will later be revealed as a filthy untruth under certain tonally esoteric circumstances.

Two notes are **enharmonic** when they refer to the same pitch: C# and Db are enharmonic, as are F# and Gb. At least they are these days. They weren't before the time of Bach, which made lots of music sound rather out of tune when it was played in a different key.

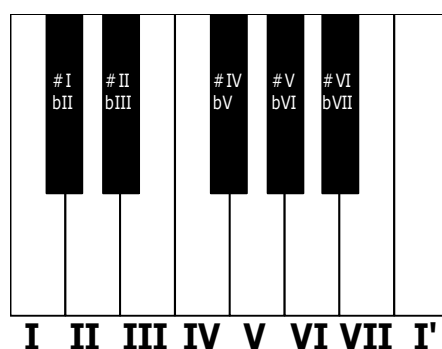
What determines the name you use for a note with more than one name has much to do with the key or scale you're using.

Keys—not the keys on a keyboard, the other sort—are explained in part 1b. Scales get explained around then too.

The above knowledge is *fundamental* - i'll be using it to teach you about other things like scales, so be sure you know what semitones and whole tones are before continuing. In fact, pay close attention when we start on the major scale or you'll be absolutely rooted² by the time we get to chords.

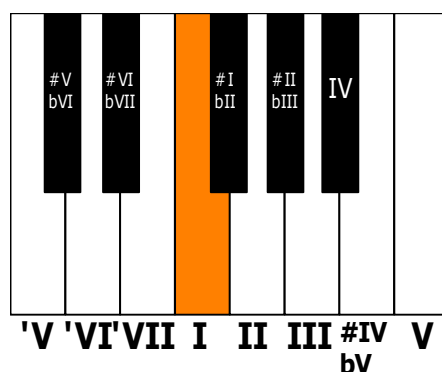
Abstract notation

This notation is adapted from music analysis and will be used exclusively for talking about chords and chord progression, mainly where it concerns chord functions. (Just nod to yourself.) I will not use it to talk about notes like other texts, because Roman numerals are quite pretentious enough. The best reason for a musician to know them, in all honesty, is so that you're better equipped to understand **other** far juicier material that goes into chord progressions. Anyway, here they are.



In this guide, Roman numerals stand for the root (base) notes of chords in a particular key, except we're not specifying which one. The example diagram up yonder uses C as its root note, represented by the Roman numeral I; I itself would stand for a chord based on C, V would stand for a chord based on G, bVII would stand for a chord based on Bb, and so on. If it doesn't make sense, compare the diagram above with the diagram of note names on the previous page.

If the relative root note were changed to F, then the abstract notes would map to the following real notes:



Here you can see that the I is now assigned to F. Whereas with C as I, IV is assigned to F, with F as I, IV is assigned to Bb. C therefore shares the same relation with F that F shares with Bb. You'll learn to

² Rooted as in screwed, not as in someone will be cheering for you. Though I am cheering for you.

describe that relationship when we get to intervals.

Abstract notation is particularly useful for talking about chords in sequence without tying things down to a particular series of notes. As long as you can translate a string of Roman numerals in the place of actual notes to the key of your choice, any discussion of chord progressions won't seem as daunting. Other guides tend to use it more than i do – there will always be easy-to-deal-with examples.

Another convention you'll see other guides use involving Roman numerals which i think is rather pants is putting minor chords in lowercase. For instance, a progression spelt i - IV - V would translate to Cmi, F, G when played in the key of C. I prefer being less ambiguous and would spell such a progression Imi, IV, V.

In this document, capitalised Roman numerals with optional chord descriptions like I, VI_{mi} and #V_{sus4} will refer to chords by their root note, relative to whatever key you play them in. (Personally i test most progressions in C, being something of a simpleton.) VI in the above example is not representative of the note D but a chord formed using D as its root note.

Intervals will be represented with common or garden numbers such as 1, 9 and 4 with sharpening or flattening put before them as required (#1, b4), and will be used for spelling chords. (Don't worry if you don't know what an interval is yet, because they get covered in chapter 2.)

At one point i've started putting the spellings of specific chords underneath them, such as in the following example:

F	D _{mi}	F	D _{mi}
F A C	D F A	F A C	D F A
E _b	B _b	E _b	B _b , C
E _b G B _b	B _b D F	E _b G B _b	B _b D F, C E G

Play the notes underneath the chord at the same time, and you'll be playing that particular chord. I call these furinotes; they're the notational equivalent of little miniature Japanese characters called furigana which are put above kanji characters (which might be pronounced any number of ways depending on context) to give learners an easy way of pronouncing them.

But before chords, I'm going to write about scales.

Scales: The New Menace

Scales function as a series of notes to pick melodies from. The word scale comes from the Italian word *scala*, meaning ladder, and so musical scales have more in common semantically with scaling sheer rock faces than the scales of justice, or the scales on a fish.

When a scale is presented in the abstract, it's given as a series of melodic intervals of semitones, whole tones, and in some cases (like the pentatonic) whole-and-semitones. In the diagrams these will be represented by w, s and w&s respectively. Each scale has a fundamental tone which lends itself to the scale's name e.g. C major, B minor, D wholetone

Why's it important to know your scales? As i've suggested before, each scale is like a palette of notes to pick your melody from. Of course the rules aren't as simple as this at all; you can make the opportunity for yourself to change scales midway through a song if you like. Using a note which isn't part of the scale you've picked can also make your melody quite striking.

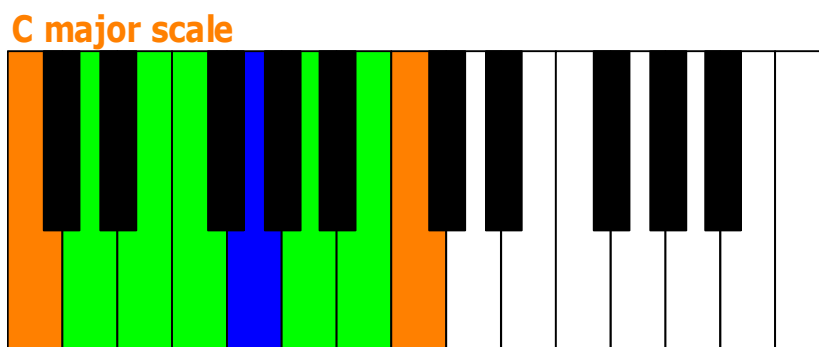
First i have to teach you about scales. Then you can start bending the rules.

Diatonic scales

Diatonic scales have nothing to do with diarrhoea brought on by drinking tonic water, so stop thinking that. They are seven note scales (not counting the repeated note at the top) and being as common as they are make a good place to start.

Major

C major is the first scale i cover because it's so easy: It's the white keys on the keyboard starting at C.



Each of the coloured-in notes is part of the scale of C major. The coloured notes are C, D, E, F, G, A, B and C again. Play it on your keyboard from bottom C to top C and you'll have done your first scale. Bravo. But only a quiet bravo because it's easy to play the scale of C major.

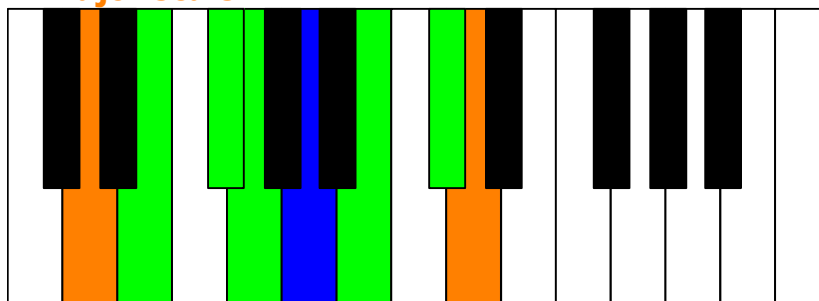
The blue note in the diagram is G, the fifth note of the scale. The fifth note of the scale serves many important harmonic functions which i'll cover later. For now, it makes the diagram prettier.

The classic major scale has a special pattern of gaps between the different notes. Starting from the root note, you go up a whole tone for your next note (D, the second) skipping the note between them (in this case, C#), then you're up another whole tone for your next note (E, the third) skipping D#. Instead of going up a whole tone for the fourth note, you go only a semitone up to F. For the fifth note of the major scale, you go up a whole tone (to G in our example), skipping a note along the way (F#). For the sixth note, you go up a whole tone again (to A) again skipping a note along the way (G#). For the seventh note, you go up yet another whole tone (to B), yet again skipping a note along the way

(A#). And for the eighth and final note of the scale, you once again advance but a semitone, and you're exactly an octave higher (at the rightmost orange C, in our case).

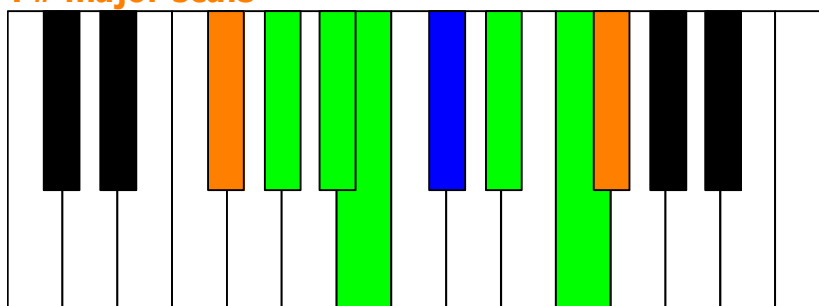
By starting at different notes like D or F# and rising up the scale with the same pattern you can derive any major scale you need. Because the pattern's the same but we're starting off with a different root note, a couple of the black keys are used for the D major scale.

D major scale



Here you can see that the D major scale goes up onto the black notes twice to preserve the same pattern of semitones and whole tones as the C major scale. The F# major scale on the other hand spends most of its time up on the black notes.

F# major scale



All of these major scales are the same simple rising melody started on different notes.

The Circle of Fifths

For those of you who like crudely formatted charts, here's all the major scales ordered by the mystical Circle of Fifths from bottom to top, or the Circle of Fourths from top to bottom. (No, i'm not changing it.)

F# major	6 sharps	F# G# A# B C# D# E# (F) F#
B major	5 sharps	B C# D# E F# G# A# B
E major	4 sharps	E F# G# A B C# D# E
A major	3 sharps	A B C# D E F# G# A
D major	2 sharps	D E F# G A B C# D
G major	1 sharps	G A B C D E F# G
C major	No accidentals	C D E F G A B C
F major	1 flat	F G A Bb C D E F
Bb major	2 flats	Bb C D Eb F G A Bb
Eb major	3 flats	Eb F G Ab Bb C D Eb
Ab major	4 flats	Ab Bb C Db Eb F Gb Ab

F# major	6 sharps	F# G# A# B C# D# E# (F) F#
Db major	5 flats	Db Eb F Gb Ab Bb C Db
Gb major	6 flats	Gb Ab Bb Cb (B) Db Eb F Gb

The way it works is this: the fifth of any note is the fifth note in its major (or minor) scale; in the scale diagrams, these notes were marked blue. G is the fifth note of C major, and the scale of G major has one sharp note in it, F#. D is the fifth note of G major and has two sharp notes in it, F# and C#. A is the fifth note of D major and has three sharp notes in it, F# and C# and G#. And so on until you get to F#.

Conversely, C is the fifth note of F major, and F major has one flat in it: Bb. F is the fifth note of Bb major, and Bb major has two flats in it, Bb itself and Eb. Eb is the fifth note of Bb major, and Eb major has three flats: Bb, Eb, and Ab. And so on again.

The circle of fifths becomes a circle when it reaches F# in the sharp series and Gb in the flat series. F# and Gb are of course enharmonic, being as they are the same note. And that's the circle. Since it's quicker to call the fifth note of a scale a 'fifth', this relationship between the different notes is called the Circle of Fifths. And that's not my capitalisation either.

Told you fifths were important!

Minor scales

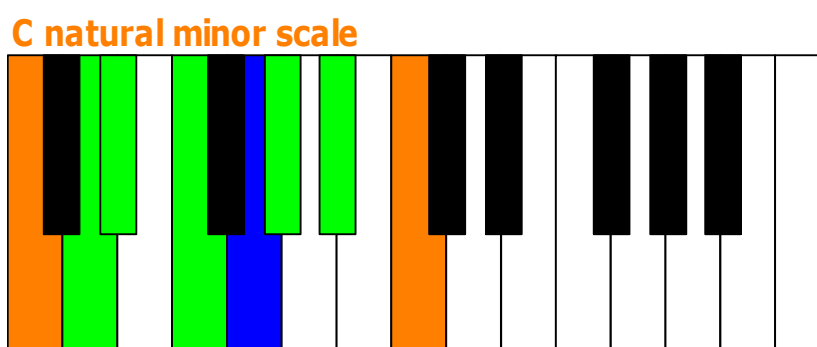
What makes a scale major or minor is the state of the third: if it's two whole tones up from the root note, the scale is major; if it's a whole tone and a half up from the third, it is a minor scale.

There are a few flavours of minor scale: the natural minor, which is directly relatable to the major scales, and the harmonic minor, which is a slight modification of the natural minor scale. There's also the melodic minor.

Natural or vanilla minor

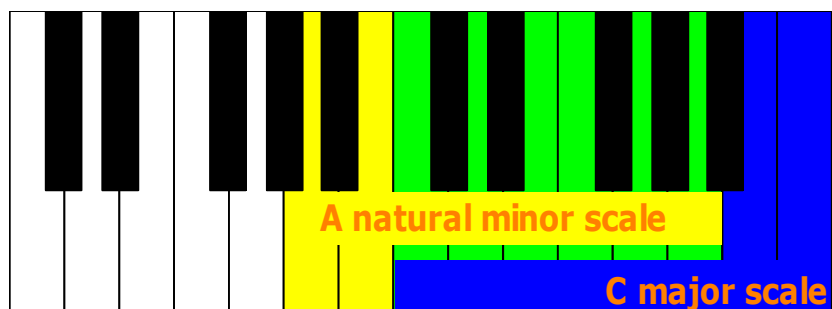
You can derive the natural minor scales from major scales in a couple of ways. Your first option is to flatten the third, sixth and seventh notes of each major scale, leaving the root, second, fourth and fifth notes all as they normally are in the major scale.

When you do that to C major to get C minor, it looks like this:



There's another way to tell what notes are in a particular minor scale by using a special relationship between the major and minor scales. Each major scale has a relative minor scale, and you can determine the relative minor by using the major scale's sixth note.

In the case of C major, the sixth note of the scale is A. This means that A minor uses exactly the same notes as C major, except with a different starting point: A B C D E F G A.



The scale of F major uses the same notes as its relative minor, the scale D minor: D E F G A B \flat C D. Relative minors are useful in composition because they allow you to potter from one key to the next without having to change notes. Again, key's covered in the section after this.

Here are the natural minor scales in chart form, again following the Circle of Fifths upwards and the Circle of Fourths downwards.

D# minor	6 sharps	D# E# (F) F# G# A# B C# D#
G# minor	5 sharps	G# A# B C# D# E F# G#
C# minor	4 sharps	C# D# E F# G# A B C#
F# minor	3 sharps	F# G# A B C# D E F#
B minor	2 sharps	B C# D E F# G A B
E minor	1 sharps	E F# G A B C D E
A minor	No accidentals	A B C D E F G A
D minor	1 flat	D E F G A B \flat C D
G minor	2 flats	G A B \flat C D E \flat F G
C minor	3 flats	C D E \flat F G A \flat B \flat C
F minor	4 flats	F G \flat A \flat B \flat C D \flat E \flat F
B \flat minor	5 flats	B \flat C D \flat E \flat F G \flat A \flat B \flat
E \flat minor	6 flats	E \flat F G \flat A \flat B \flat C \flat (B) D \flat E \flat

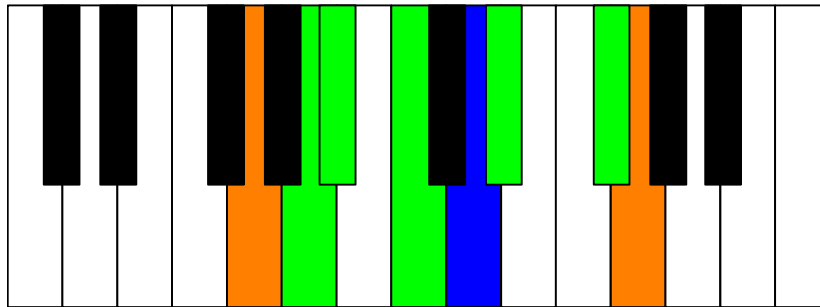
The natural minor is the same as the Aeolian mode.

Harmonic or strawberry minor

Harmonic minor scales are exactly the same as natural minor scales except that the seventh note of the scale is only a semitone lower than the octave note, instead of a full tone lower than the octave note. In the case of A minor, this makes the scale run A B C D E F G# A. The harmonic minor is also known as the Mohammedan scale.

Alternatively, just flatten the third and sixth notes of a major scale. The harmonic minor scale of G, for instance, goes like this:

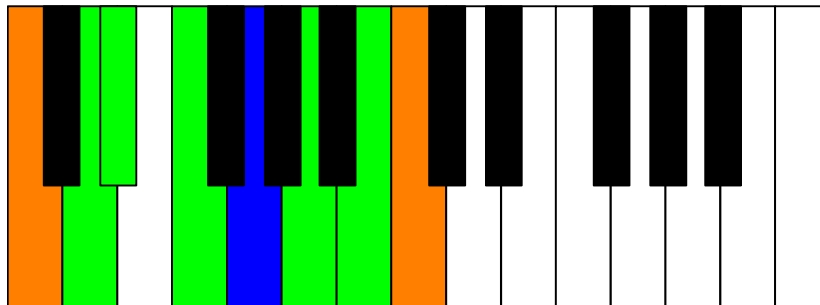
G harmonic minor scale



Melodic or chocolate fudge minor

The difference between the melodic minor scale and the major scale is that the melodic minor has a flattened third note. That's about it. It's barely a minor scale at all, but due to the flattened third note it manages to slip into this group. The melodic minor is much beloved of jazzniks and provides them with a few more modes and degrees to improvise in.

C melodic minor scale

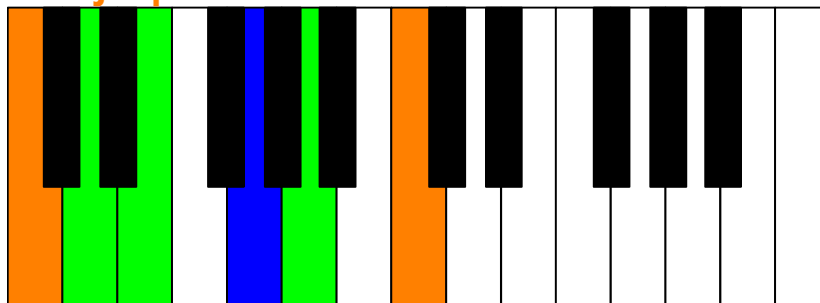


Pentatonic scales

As their name suggests (at least it does if you know Greek) pentatonic scales have five notes instead of seven. I'm introducing them in detail alongside the major and minor scales because they are much less likely to turn around and bite your ears off when you use them to write a melody. It's the truth.

Here's the C major pentatonic scale.

C major pentatonic scale

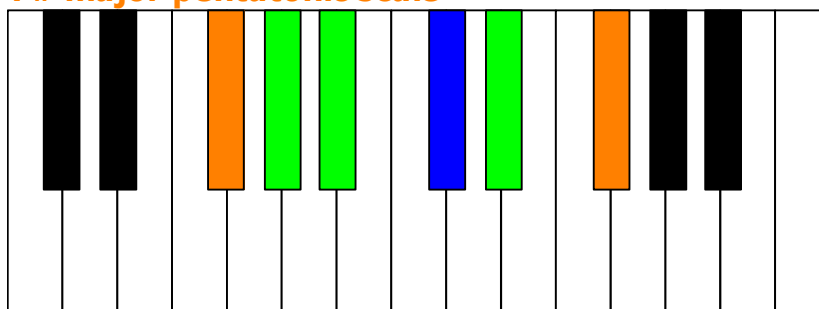


It's exactly like the C major scale with the fourth and seventh notes (F and B) missing. This is useful because it means there aren't any notes a semitone apart, and any note you play next to one another is unlikely to jar horribly with the one next to it.

If you want an easy-to-remember pentatonic scale, you can do no better than F# major pentatonic.

This is why.

F# major pentatonic scale



Yep, that annoying song people play with their knuckles on the piano is in F# pentatonic. Much Oriental music is in various pentatonic scales as well, and that's the mood pentatonic scales usually evoke.

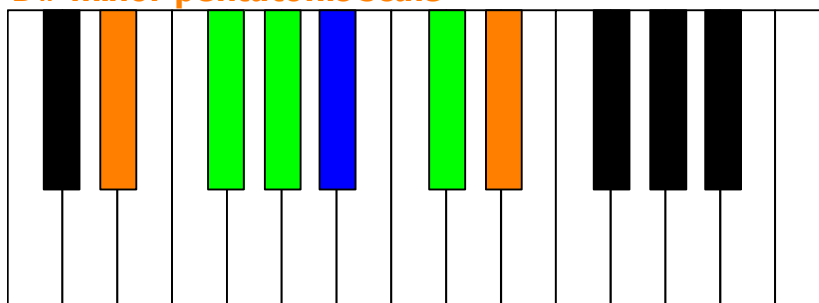
Here's a chart of all the major pentatonic scales, following the circle of fifths again.

F# maj pent	5 sharps	F# G# A# C# D# F#
B maj pent	4 sharps	B C# D# F# G# B
E maj pent	3 sharps	E F# G# B C# E
A maj pent	2 sharps	A B C# E F# A
D maj pent	1 sharps	D E F# A B D
G maj pent	No accidentals	G A B D E G
C maj pent	No accidentals	C D E G A C
F maj pent	No accidentals	F G A C D F
Bb maj pent	1 flat	Bb C D F G Bb
Eb maj pent	2 flats	Eb F G Bb C Eb
Ab maj pent	3 flats	Ab Bb C Eb F Ab
Db maj pent	4 flats	Db Eb F Ab Bb Db
Gb maj pent	5 flats	Gb Ab Bb Db Eb Gb

The minor pentatonic scales can be derived from the major ones using the relative minor method discussed in the last part, except it's the fifth note of the pentatonic scale that forms the root note of the relative minor because the fourth note gets skipped.

Derived from the Eb scale, the C minor pentatonic scale is C Eb F G Bb C. But let's have something other than the C minor pentatonic. Here, let's have a diagram of Eb's minor pentatonic so the black notes don't feel too left out.

D# minor pentatonic scale

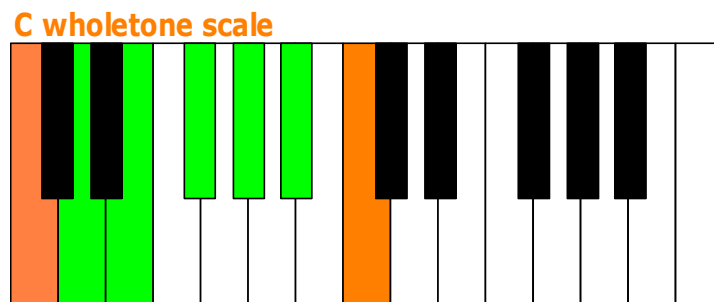


Synthetic and alternative scales

There are more scales than merely the pentatonics and the major/minors. Some of them might turn out to be very useful for you, so they're worth taking a look at even if only in passing.

Whole tone scale

Leave a whole tone between each note and you end up with a seven-note scale called a whole tone scale.



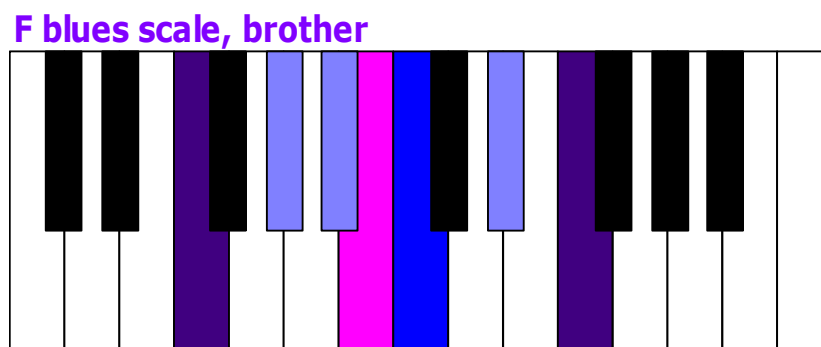
This is the scale you want when you feel like adding a touch of the mystical and strange to your music. It sounds quite distinct and fantastic when used right, and you can write acid lines with the whole tone scale very easily.

The whole tone's floatiness is partly to do with an interval named the tritone which i'll mention again in the chapter on intervals, and partly because it hasn't got a perfect fifth in it to anchor down the root note. All chords that exclusively use notes from this scale share its characteristic eeriness.

If you've got a copy of Kraftwerk's *Space/ab*, listen to the intro of it for a nice whole tone scale. If not, don't feel bad since i don't have that Kraftwerk album either.

Blues scale

The blues scale is slightly strange compared to the other scales i've covered here but it really really works. Even the diagram's got the blues this time.



Told you. It really works though. It's inspiringly functional, in fact. It's basically a minor pentatonic scale with an added sharp fourth note, singled out in the diagram with purple. This scale's got a whole lot of soul, and i'm sure i play more or less every funk bassline i can think of with a variation of these notes.

Chromatic scale

(What? This isn't a scale. What was I on when I wrote this bit? Oh well, may as well get this over with now..)

The chromatic scale is a funny sort of scale, because it uses all twelve tones of the octave. This scale can be used in many ways and makes the major and minor diatonic scales seem pretty conservative. The root note of the scale as well as the fourth and fifth are still as important in writing melodies in this scale, but the chromatic scale allows you to use any note you please. It takes a bit more practice to use it than the diatonic scales, and takes way more practice to use than the pentatonic scales.

It's not really worth doing a diagram for, since every note's being used. Go and colour one of the other diagrams in with text or something.

The Aphex Twin has his fair share of quite chromatic melodies and chords—or maybe it's just that he doesn't bother staying in the same key for more than a second or two at a time because he never learnt about proper music theory. (Philip Glass said so.) Still, he's got a tank and lives in a bank, so i'll shut up.

Microtonal scales

Microtonal scales go beyond the conventional twelve-tone scale and begin inserting notes in the semitone wide spaces between the notes. I've got even less experience with this sort of thing than i do with chromatic scales, but rumour has it that Wendy Carlos is a microtonal scale boffin. Microtonal scales are a bit further out than most composers need to consider, me included, but if you feel the need to investigate the sounds of these scales you should do a search for 'microtonal' on Google.

Lontano is a nice microtonal piece by Transylvanian composer György Ligeti which was used in *The Shining*.

More scales than a fat bastard fish, mate!

its very helpfully pointed out a scale chart at <http://www.harmony-central.com/Guitar/exotic-scales.txt> which was compiled by Alexander Edward Sager (aesager@acs4.acs.ualgary.ca). I'll reproduce and analyse some of them into tones and semitones here. A lot of them are subtle variations of one another as you'll quickly notice when you play them. The scales are usually spelt with C as the root note, so of course you can transpose them any way you like.

From the names of these scales you might guess that many of them are tied to particular cultures. The Byzantine scale for instance is distinctly Middle Eastern, and the five note scales are generally (though not always) used in Eastern Asia.

It's not at all impossible that some of my analyses of the spaces between the notes are wrong if not a bit confusing, so when in doubt use the given notes as your guide. Furthermore, I'm not going to go into detail on how these are meant to be used as I honestly wouldn't have a clue myself.

I've also spelt out the scales in terms of the notes in a major scale. For instance, in the Mongolian scale you have 1 2 3 5 6 1'; this means that if you play the first, second, third, fifth and sixth notes in a normal major scale, then play the first note except an octave higher, you've played a Mongolian scale. For the Japanese scale, 1 b3 4 5 b7 1' , you play the first note of the major scale, then the third note flattened one semitone, then the fourth and fifth notes as normal, then play the seventh note flattened before moving up to the eighth.

Five note scales

Mongolian: C D E G A C .w.w.w&s.w.w&s. 1 2 3 5 6 1'

major pentatonic (the black keys starting at F#)

Japanese:	C Eb F G Ab C	.w&s.w.w.w&s.w.	1 b3 4 5 b7 1'
<i>minor pentatonic (the black keys beginning at D#)</i>			
Egyptian:	C D F G Bb C	.w.w&s.w.w&s.w.	1 2 4 5 b7 1'
<i>in sen pentatonic (the black keys beginning at C#)</i>			
Hirajoshi:	A B C E F A	.w.w.w&w.s.w&w	1 2 b3 5 b6 1'
Kumoi:	E F A B C E	.s.w&w.w.s.w&w.	1 b2 4 5 b6 1'
Iwato:	B C E F A B	.s.w&w.s.w&w.s.	1 b2 4 b5 b7 1'
Balinese:	C Db Eb G Ab C	.s.w.w&w.w&s.w.	1 b2 b3 5 b6 1'
Pelog:	C Db Eb G Bb C	.s.w.w&w.w&s.w.	1 b2 b3 5 b7 1'

Seven note major scales

Oriental:	C Db E F Gb A Bb C	.s.w&s.s.s.s.w&s.s.w	1 b2 3 4 b5 6 b7 1'
Double Harmonic:	C Db E F G Ab B C	.s.w&s.s.w.s.w&s.s.	1 b2 3 4 5 b6 7 1'
Enigmatic:	C Db E F# G# A# B C	.s.w&s.w.w.w.s.s	1 b2 3 #4 #5 #6 7 1'
Major Phrygian:	C Db E F G Ab Bb C	.s.w&s.s.w.s.w.w.	1 b2 3 4 5 b6 b7 1'
<i>also known as the Jewish and Spanish scales</i>			
Gypsy/Byzantine:	C Db E F G Ab B C	.s.w&s.s.w.s.w&s.s.	1 b2 3 4 5 b6 7 1'
Persian:	C Db E F Gb Ab B C	.s.w&s.s.s.w.w&s.s.	1 b2 3 4 b5 b6 7 1'
Major Locrian:	C D E F Gb Ab Bb C	.w.w.s.s.w.w.w.	1 2 3 4 b5 b6 b7 1'
<i>also known as the Arabian</i>			
Lydian Minor:	C D E F# G Ab Bb C	.w.w.w.s.s.w.w.	1 2 3 #4 5 b6 b7 1'
Leading Whole Tone:	C D E F# G# A# B C	.w.w.w.w.w.s.	1 2 3 #4 #5 #6 7 1'
Hindu:	C D E F G Ab Bb C	.w.w.s.w.s.w.w.	1 2 3 4 5 b6 b7 1'
Overtone/Acoustic:	C D E F# G A Bb C	.w.w.w.s.w.s.w.	1 2 3 #4 5 6 b7 1'
<i>said to be the most psychoacoustically natural scale</i>			

Seven note minor scales

Javanese:	C Db Eb F G A Bb C	.s.w.w.w.w.w&s.w.	1 b2 b3 4 5 6 b7 1'
Hungarian Gypsy:	C D Eb F# G Ab Bb C	.w.s.w.s.s.w.w.	1 2 b3 #4 5 b6 b7 1'
Altered scale:	C Db D# E F# Ab Bb C	.s.w.s.w.w.w.w.	1 b2 #2 3 #4 b6 b7 1'

Seven note scale pairs

Hungarian Minor:	C D Eb F# G Ab B C	.w.s.w.s.s.w&s.s.	1 2 b3 #4 5 b6 7 1'
Hungarian Major:	C D# E F# G A Bb C	.w&s.s.w.s.w.w.w.	1 #2 3 #4 5 6 b7 1'
Neapolitan Minor:	C Db Eb F G Ab B C	.s.w.w.w.s.w&s.s.	1 b2 b3 4 5 b6 7 1'
Neapolitan Major:	C Db Eb F G A B C	.s.w.w.w.w.w.s.	1 b2 b3 4 5 6 7 1'

Scales with more than seven notes

Spanish 8 Tone:	C Db Eb E F Gb Ab Bb C	.s.w.s.s.s.w.w.w.	1 b2 b3 3 4 5 b5 b6 b7 1'
Whole-half diminished	C D Eb F F# G# A B C	.w.s.w.s.w.s etc	1 2 b3 4 #4 #5 6 7 1'
Half-whole diminished	C Db Eb E F# G A Bb C	.s.w.s.w.s.w etc	1 b2 b3 3 #4 5 6 b7 1'

The modes³

³ This bit sourced mainly from http://en.wikipedia.org/wiki/Jazz_scale

This is a set of scales with a history of use in the church, but these days modes are associated almost entirely with jazz. If you've ever heard anyone talk about ionian, mixolydian or lydian modes, they're easy enough to hear for yourself – and for the major scale modes at least, you don't even have to touch the black keys on your keyboard.

Major scale modes

These are the modes of the major scale. As you can see, there's no black keys to play, but each of these modes has its own specific harmonic colour.

Ionian	C D E F G A B C	no alterations
Dorian	D E F G A B C D	b3, b7
Phrygian	E F G A B C D E	b2, b3, b6, b7
Lydian	F G A B C D E F	#4
Mixolydian	G A B C D E F G	b7
Aeolian	A B C D E F G A	b3, b6, b7
Locrian	B C D E F G A B	b2, b3, b5, b6, b7

The aeolian mode is the same as the natural minor scale, and the ionian mode is the same as the major scale. I personally like the mixolydian mode quite a lot for its flattened seventh. So did that Beatles song *Strawberry Fields*.

Melodic minor scale modes

These are the modes of the melodic minor scale. In all of these examples, there's one black key to play – just the Eb. That's the one between D and E. It's not so bad. But one note out of place makes a heap of difference.

Ascending melodic minor	C D Eb F G A B C	b3
Dorian 2/Phrygian nat 6th	D Eb F G A B C D	b2, b3, b7
Lydian augmented	Eb F G A B C D E	#4, #5
Lydian dominant	F G A B C D Eb F	#4, b7
Mixolydian flat 6th	G A B C D Eb F G	b6, b7
Half-diminished	A B C D Eb F G A	b3, b5, b6, b7
Altered scale	B C D Eb F G A B	b2, b3, b4, b5, b6, b7

Of course, the modes can be in whatever key you like – C mixolydian would be C D E F G A Bb C. But if you want to hear their harmonic character, that's the “white keys only” version.

Each mode, as with each scale, has a particular feel and use which you're best off discovering yourself instead of being told how to use them. Miles Davis, the pioneering trumpet player and jazz composer, dusted modes off and jazzed around with them, and it's for that reason that jazz reference books will have the most to tell you about modes in general. *The Jazz Theory Book* by Mark Levine is absolutely nuts about them, for instance, but it's not worth touching on modes further until after we've dealt with chords, and that's a couple of chapters off yet. Not to mention that book actually talks about modes *as though they actually are chords* and I don't want to go there just yet.

Key

What's the difference between scale and key? Let's clear this up now that I've used the word 'key' a few times before I say something stupid to the effect that the concept of a key is equal to the concept of a scale. Though they're related to one another, they're not equal at all. Though they may well refer to the same group of notes from time to time, their senses are very different.

When it's said that a song is in the key of C major, this means that the note C acts as the melodic centre of the song, and that the chord C acts as the harmonic centre. If a song is in the key of Bb minor, this means that Bb is the melodic centre of the song, and that the chord Bbm acts as the harmonic centre. It's not that the key note or chord is necessarily the most frequent note or chord, or even played louder than other chords. To proclaim the key of a piece of music means that you're anchoring the music on a certain note and tonality (major/minor).

To state a key is to invoke a matrix of relationships between the key note and all other notes, and the key chord and all other chords. Every note you play is then of that key, and every chord you play is also of that key, because using those relationships and that structure all of the music in a particular key points tacitly back towards the key note and the key chord.

If this sounds like a tricky balancing act and that you'd rather take up painting instead of writing music, let me tell you this right away: music with no key at all is nowhere near as common as music with a key. It's only since the later 1890s that the idea of key came to be challenged by composers like Schoenberg with twelve-tone systems and serialism that threw out the idea of key centres to see what would happen. Music with a key comes far more naturally to a composer because with a centre comes a recognisable geography of sorts, whereupon the harmony and melody can come away from and head back towards this centre.

Brave new sounds aside, music with a key is familiar. Once you remove the familiarity of the key centre, you're navigating into much stranger waters where it will help to know rules before you break them.

If you've ever heard a piece of music referred to as Such-And-Such In D Minor, you'll have already encountered key designation: in this example, D is the designated key note which plays the role of a central note, and the piece will tend towards using the minor scale of the key note.

(That most infamous of songs reputedly in D minor, Kyle's Mom's a Bitch in D minor, isn't in D minor, for the record; it starts off around C major and ascends in key a few times, probably more in the movie version. Anyone who thinks therefore that Trey Parker doesn't know anything about music theory should immediately find *Cannibal The Musical* and check out the argument that the trappers have with the miners about singing off-key.)

The key of a song can change over the course of the song through key changes. If you can cast your mind back to the 1970s and 1980s where pop songs would frequently jump up a whole tone towards the end for the hell of it, that's an example of a key change. You don't hear key changes too much anymore in music, as they sound kind of retro.

Scales are like an expression of the key: scales speak more of a palette of available notes, with a given fundamental or root note that relates to all the other notes in the scale both harmonically and melodically.

Key on the other hand describes a certain note along with a certain tonality which dominates the song and to which other notes and harmonies resolve. Resolution gets discussed later in the section on chord progressions.

You can go up and down scales, but you can't go up and down a key. A song can make use of a scale but you won't ever find a song designated in the key of C pentatonic. No such key exists.

Intervals

Intervals are measurements between notes, and the basis of harmony. You talk about intervals when you want to describe the tonal nature of chords, as opposed to just spelling them with Roman numerals. To speak of intervals involves two concepts, consonance and dissonance. **Consonance** (notes sitting together nicely) and **dissonance** (notes jarring with one another) are elements of harmony you can manipulate to whatever effect you please. This chapter will give you some grounding in manipulating consonance and dissonance to your advantage to create whatever musical effect you're after.

Naming the intervals: ordinal names

unison (1)		
major second (2)		(b2) minor second
major third (3)		(b3) minor third
perfect fourth (4)		
perfect fifth (5)		(b5) tritone, diminished fifth
major sixth, diminished seventh (6)		(#5) augmented fifth, minor sixth
major seventh (7)		(b7) minor seventh
octave (8)		
ninth (9)		(b9) flat ninth
flat eleventh (b11)		(#9) sharp ninth
eleventh (11)		(#11) sharp eleventh
thirteenth (13)		(b13) flat thirteenth
		(#13) flat thirteenth

This chart⁴ gives us the intervals relative from our old friend C. As with the abstract notation in section zero, the notes that the intervals denote change based on what the root note is determined to be. You've already encountered a primitive version of the interval spelling system above in the scales section where i was spelling out scales for you.

Consonance, dissonance, and the harmonic series

The relationship between the root and the perfect fifth (with C as root, C and G) is very consonant indeed; if the relationship weren't consonant, guitar power chords wouldn't sound as good as they do. The two notes fit together well when played simultaneously. By contrast, the root and the minor second (C and C#) played together sound very jarring indeed.

The relationship between the root and the perfect fifth is described as **consonant**, and the relationship between the root and the minor second, one semitone up, is described as being **dissonant**. The root and the major second (C and D) also create a bit of dissonance when played at the same time, but it's much softer dissonance than the dissonance between the root and the minor second. By comparison, the root and the perfect fourth aren't quite as consonant as the root and the perfect fifth are either, partly due to simple physical relationships between the root note and its interval.

Some notes are much more dissonant in combination with one another than others, and some sound more consonant in combination than others. Right in the middle of all this consonance and dissonance

⁴ I've mixed up jazz and conventional terminology here. Don't get your knickers in a twist.

you have an interval called by various names: the tritone, the diminished fifth, and the augmented fourth are three of its most common names. To hear this interval in action, play a C and an F# at once. It's a bit floaty and' spooky, isn't it? The clergy used to call it diabolus in musica and all but banned its use in religious music. When i first heard the tritone being blatantly used, it was in the Assembly Party intro by Future Crew and i demanded to know from my friend what that chord sequence was.

The tritone is notable for being the only interval relationship that is symmetrical. C is the tritone of F#, and F# is the tritone of C. By contrast, G might be the perfect fifth of C, but C is only the perfect fourth of G.

It's definitely worth exploring the interval relationships yourself using a keyboard, because they're excellent to know when you want to make up your own chords from scratch or pull apart existing ones to get how they work.

Very consonant intervals: *perfect fifth, octave*

Fairly consonant intervals: *major or minor third, major fourth, sixth/diminished seventh*

Weird floaty interval: *augmented fourth/diminished fifth, aka the tritone*

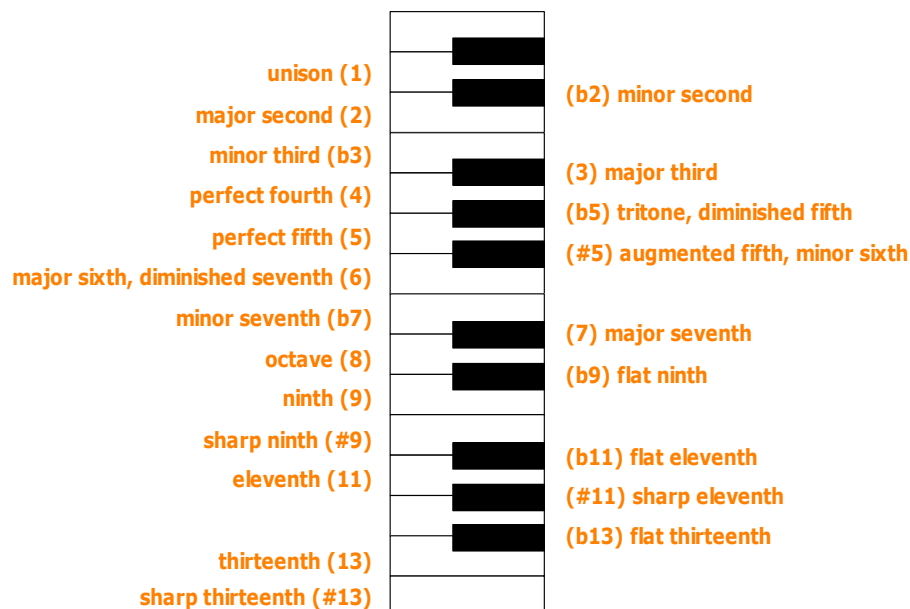
Fairly dissonant intervals: *major second, minor seventh*

Very dissonant intervals: *minor second, major seventh*

Any chord you make will ultimately be characterised by these dissonances and consonances. Let's look at the C major chord for an example: C E G. Play all three notes at once.

Here we have a root note, a major third and a perfect fifth (C, E and G). The perfect fifth is totally consonant, and the major third is quite consonant. But also note that the perfect fifth note of the root (G) is the minor third note relative to the chord's major third note (E). This adds to the chord's consonance. If we were to add an F# to a C major chord and play it C E F# G, we'd have a note that would clash badly with G (minor second), quite a bit with E (major second) and would unsettle C a bit (augmented fourth). The sound of the chord doesn't change that much as it would if we were to change the boundaries of the chord by adding something lower than C or higher than G, though.

Here's an interval chart with D as the root note, just to scuttle any intentions you might have of writing every piece of music possible in C:



I'd like to finish off the intervals chapter with a colourful and hopefully useful reference chart for your delectation, colour coded to make it easier to use, but bollocks to that idea because i've just spent eleven hours on this guide and i need a rest. Next edition perhaps. :)

Naming the intervals yet again: functions

As luck would have it, the intervals have a completely different set of somewhat older names which run parallel to the ones that i've just gone through – these names are describe **harmonic functions** and usually refer to chords. Some of these names are more important to know than others.

The root note is known as the tonic, because it is this note that is the fundamental tone. Playing two tonics one after the other is more a thing of rhythm than of melody.

The major second is known as the supertonic, since it's one note above the tonic. *Super* is Latin for above. If it's a minor second, then it's a minor supertonic. Both supertonic intervals grate against one another somewhat played in unison, moreso the minor than the major.

The major third is called the mediant, being as it is right between the root and all-important fifth. It's from the Latin word *medio*, in the middle. The minor third is identified as the minor mediant. The full mediant over the tonic has a strong and happy quality, while the minor mediant over the tonic has a sombre quality to it.

The fourth is called the subdominant, and the fifth is called the dominant. What these names refer to is that if you go up five notes on a normal scale from the root note, you come to the fifth. The fifth is indeed the dominant note of the scale after the root. Thus the fourth, being one note below the dominant, is the subdominant. *Sub* is the Latin word for below and has nothing to do with healthy sandwiches or underwater vessels. The subdominant over the tonic has a sort of planted strength to it, while the dominant over the tonic has a more forthright strength.

Between the dominant and the subdominant lies the diminished fifth. It's this naming system that gave it the name tritone, because it's three whole tones (six semitones) away from the root. Remember, the tritone relationship between two notes is symmetrical. A tritone over the tonic sounds floaty and weird.

The major sixth is called the superdominant, since it's one note up from the dominant, or the submediant, since it's the exact same amount of notes downward from the root note as the mediant is upward. If it's a minor sixth, it's the minor submediant. The major submediant over the tonic has an almost lilting quality, while the minor submediant is somewhat spooky.

The major seventh is called the leading note, because it leads into the tonic so naturally. The leading note is an interval unlike any other in sound, even more striking than the tritone when played over the tonic!

The minor seventh is so important compared to the other flattened intervals that it's got a special name for itself: the subtonic. The subtonic has a suspended, unresolved quality over the tonic.

If only it were always as simple as twelve notes..

Earlier on i mentioned mathematical relationships between notes making them more consonant or more dissonant. This consonance/dissonance thing even comes down to the precise individual frequencies of the notes, which far from being absolutely set in stone in the vaults of the Vatican have changed and developed over time. Thanks to the wonders of technology, you can now tune your notes precisely how you like them.

Let's say you record a note on a keyboard to tape, and you've got a way of speeding this tape up as fast as you like. If you speed the tape up to twice its original speed, you get a note an octave up from the original which is the same tone. Three times faster and you get a fifth tone. Four times faster and you get the same tone as the root note, and then five times faster gives you a major third tone. Six times faster nets you another fifth tone, seven times faster produces a tone which is an out-of-tune minor seventh, and eight times faster returns you to the original tone. If you keep increasing the frequency up and up until about fifteen or sixteen, you've covered most of the notes in the major scale at least once with a couple of out-of-tune ones to spare. This is called the harmonic series.

In modern equal temperament where all the notes are spaced evenly apart across the octave, two

notes a semitone apart have a frequency relationship roughly equal to 1:1.05946; a whole tone means a frequency relationship of approximately 1:1.12246 between the pitch of two notes. So G is in fact the frequency of C times 1.492 or so, not times 1.5 as you'd expect from the explanation of the harmonic series i just gave you.

So why isn't the frequency of G the same as the frequency of C times 1.5? There's a story to be told in that.

Once upon a time in a far-away land, people used to tune their musical instruments using easily-figured-out frequency ratios. Anyone who's ever tuned a guitar will know that sounding the same two notes simultaneously on two different strings will result in a sort of wavering effect. This wavering effect is called a beat frequency, and always equals the frequency difference in the two notes. Tuning the notes closer and closer together makes the beat frequency slower and slower until eventually the notes are identical enough for the beat frequency to be completely undetectable.

This beat frequency effect also occurs between two notes which are mathematically related. For instance, a perfect fifth interval is one where two frequencies have a frequency ratio of 3:2 – 660Hz is the perfect fifth of 440Hz for instance. A perfect fourth interval inverts that ratio to make it 4:3 – 880Hz is the perfect fourth of 660Hz. (Hz stands for Hertz, or cycles per second. The frequency of A below middle C is 440Hz.) Other frequency ratios include 5:4 for the major third, 8:5 for the minor sixth, 6:5 for the minor third and 5:3 for the major sixth. These are relatively mathematically simple ways of determining the different frequencies of the notes in your scale, and this is part of the tuning practice known as just intonation.

The problem is that having tuned all your notes off the same note and having a mathematically stable scale as long as you work with that note, wandering from key to key can and does lead to the notes sounding very out of tune. If you tune all your notes off of an A using simple maths then play in the key of B, B is going to sound out of tune – the notes will by and large be sharp or flat relative to B even though they sound fine in A. If you can keep retuning the notes to fit the scale you're in that's fine, but doing this with actual physical instruments is not all that practical.

The compromise was to eventually split the notes of the octave up evenly instead of using simple mathematical relationships that favoured one key over another. Splitting a twelve note octave up equally means designating a semitone as the twelfth square root of two. (Since the distance between a frequency and a frequency an octave up is always going to be two, you need a number that will end up double its value when you multiply it by itself twelve times.) This magic number is around 1.05946, and powers twelve-tone equal temperament.

This is all well and good, but why should you, a likely confused reader, care about all this underlying mathematics?

Perhaps it's because once twelve-tone equal temperament came about, it was possible to start exploring some far more interesting places in harmony because composers didn't have to worry about sounding out of tune in one key. (Bach in particular used to torment his instrument tuners by playing the most gratingly out-of-tune intervals at them when they came to tune his Moog or whatever he used.. Bach used a Moog didn't he?)

Perhaps it's also to let you know that alternate tunings are out there. Just intonation is noteworthy because giving notes simple mathematical relationships means they sit together far more consonantly, removing a lot of the very subtle dissonance in twelve tone equal temperament. Once that last tiny bit of dissonance is gone, the difference is remarkable. Some people describe justly-intoned scales as sounding dull and lifeless compared with the equally tempered equivalents; personally i think that stillness lends itself wonderfully to ambient music.

And of course you can get different degrees of equal temperament by splitting the octave up into chunks other than twelve. I've written ten-tone equal temperament ambient before, using an octave consisting of ten equally-spaced notes. Some of them sounded a bit flat around the middle but it was definitely an interesting exercise.

Just another couple of ideas to throw into the pot anyway.

Chords

A chord, in simple terms, is a combination of three or more notes⁵, often sounded simultaneously. Chords will always have a root note, which is the harmonic anchor of the structure, but it won't necessarily be the lowest note in the combination of notes being played.

Three-note chords are called **triads**, and have nothing to do with Asian gangs with a penchant for sharp kitchen utensils. Atop of the triads you can stack even more notes derived from the root to form sixth chords, seventh chords, ninths, elevenths, or even thirteenth. Fifteenths are neither required nor allowed. Seventeenth is *right out*.

The simple triad will always have some flavour of fifth note, be it perfect (normal), augmented (sharpened) or diminished (flattened); it will also commonly have a third which will be either major or minor, although you can swap the third for a second or fourth which turns it into a suspended chord. Whether the third is major or minor determines the **tonality**, and this third sets the mood for pretty much the entire chord. It's so important that whether a chord is major or minor is second-fiddle only to what its root harmonic tone is.

The overall harmonic colour of a chord or simultaneous combination of notes is called its **sonority**. Sonorities can be altered significantly by the accompanying bass notes, as well as the low-to-high order that the notes are played in (**inversions** and **voicings**). For instance, a C major triad (C E G) can be voiced from low to high as C G E' (spread), G C E, E G C, etc. More will be said about inversions and voicings later. For now, it's enough to know what "sonority" refers to.

Although you only need to sound three particular tones to play a triad, and even then not, you can sound them with as many actual notes as you like and it'll still be that chord. To take an example, consider a common-or-garden guitar. A guitar has six strings, tuned E B G D A E from top to bottom (easy to remember: Easter Bunny Gets Drunk At Easter) and covering about two octaves, and hence you can play chords with up to six distinct notes over that more or less two-octave range. What usually happens is that a few of the notes are doubled up.⁶

If you play the chord E major on a keyboard for example, you'll typically use three notes because that's all you need to sound this particular chord. Those notes are E, G# and B. On a guitar, you can play just one instance of each of these three notes but that's unusual: the usual E major chord on a guitar has three Es (one at the bottom, one at the middle, and one at the top), two Bs (one second-from-the-bottom and one second-from-the-top), and one G#.

Everything's more harmonically complicated on guitars; you may as well accept that right away.

That said, it's good fun to experiment by leaving notes out of chords to create chord fragments. How much does the character of a chord change with the loss of one note, after all? Even better, just hold sound notes simultaneously at random until you find something you like. Leave out the notes you don't like. Change their order around. See how it affects the sonority – is it better without the fifth? Is it better with an added second?

What we get with chords are interval complexes, and a complex of intervals creates harmony. It's harmony that's fundamental to the way i for one think about music, no matter how weird and avant garde that "harmony" is. Tones working in unison, drones sounding in unison, anything sounding in unison creates a harmony where the parts are both there in and of themselves, and creating this whole. Chords are truly the easiest introduction to that concept in music.

Even a simple melody playing solo by itself can form the shapes of the chords you're about to be introduced to. You just can't escape the chords. (Nor can you easily escape the *fnords*, but that's for another book entirely.)

My point is that you could conceivably play a chord progression (a series of chords) with power chords on one instrument and spell out the tonality on another.

⁵ Arguably two or more notes, since some notes are more obvious than others.

⁶ Even on a ukulele, the C major triad is doubled up at an octave interval with only four strings.

Deciding which instruments are going to do what is called arranging, and chords are also more or less the first opportunity you've got to think about that kind of thing. Arranging gets a look-in in the last chapter on structure, and progressions are covered later in this chapter and in the variation chapter.

Manifesting chords

It goes almost without saying, bar this short note, that you can have a chord instantly by playing all of its notes at once. What's more interesting than simply sounding all of the notes at once is spelling out the notes of the chord one by one in a melody. In musical terms, this is called an arpeggio. A contrivance or device which lets you hold down a chord to produce an arpeggio is therefore an arpeggiator, which you may or may not have already known.

Sentence example: *Many trance producers could easily be replaced by arpeggiators.*

Introduction to the verbose chord dictionary

The format of this dictionary won't make it immediately obvious what all these chords are, nor does it seek to make obvious how the chords relate, how to use them, how to twist and permute them, how to make people spontaneously explode into orange shafts of joy with them, or anything that complicated. It will tell you what their names are, why they're called that, how to spell them, and what they sound like.

I want to show you how many different chords there are, and what they sound like. The complicated stuff about how to use them "appropriately", i'll leave for a later chapter.

The best thing to do at this point would be to have a polyphonic keyboard of some sort ready (Nutchords included), and when you want to hear what a chord sounds like, just play it. The chords are spelt mainly in the key of C for your convenience, but i strongly encourage you to try to spell them based on other notes in order to get familiar with them. Nutchords will do that sort of thing automatically for you if you're lazy.

You will notice in the descriptions that certain chords are linked to modes; modes are discussed at the end of chapter 2.

Triads

Triads are chords which are composed of three notes, hence the term 'triad'. Tradition tells us that there are four basic triads, and two others which are probably more useful than the two more obscure basic ones.

These first two triad chords – the major and minor triad – really should be thought of as the two main primary colours of modern Western music, with the much more rare diminished triad and the suspended triads rounding things out. It's also worth pointing out that chords are typically named for their important bits, with certain features (like the perfect fifth) assumed to be implicit and not worth mentioning unless otherwise stated.

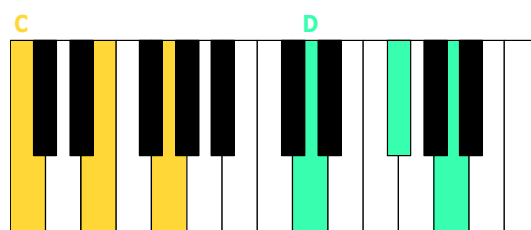
Diatonic tonal triads

The following triads are diatonic, meaning that they exist inside major or natural minor scales. (More on that later.) And they're tonal because they express a tonality – major or minor.

Major

Transcription: I (C, D, F)
Spelling: 1 3 5 (C E G, D F# A, F A C)
Structure: root, major third, perfect fifth
Named for: the major third

This triad is so fundamental to music in general that it's hard to think of music without it. It's so basic, so unbelievably ubiquitous and so useful that it's required knowledge for anyone who wants to know anything about music. At all. Yeah. Of the two



harmonic primary colours (the other one comes next), major chords more often suggest a certain brightness, warmth and/or vitality.

The first, fourth and fifth interval chords of any vanilla major scale are always major, so in a C major scale, C, F and G all have major triads. In fact, if you combine the notes of the C major triad, the F major triad and the G major triad, you get all the notes of the major scale. Useful mental shortcut, that.

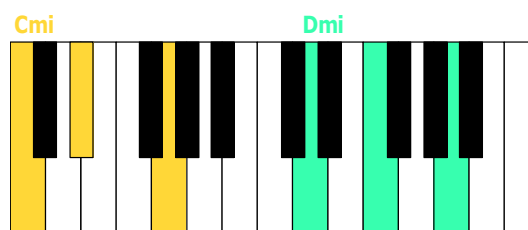
If you're in a particular key and use a major triad chord in its first inversion based on the minor second of your key (Db if you're in C, Bb if you're in A) before continuing onto the dominant seventh for your key (based on G if you're in C, E if you're in A), then you've just completed a harmonic manoeuvre called a Neapolitan sixth. Good on you.

Minor

Transcription: lmi (Cmi, Dmi, Fmi)
Spelling: 1 b3 5 (C Eb G, D F A, F Ab C)
Structure: root, minor third, perfect fifth
Named for: the minor third

The second deeply fundamental triad, this is the more melancholy of the two main triad chords in music.

You'll know it when you play it. A minor triad suggests a more sombre, subdued and cool kind of going on than a major triad.

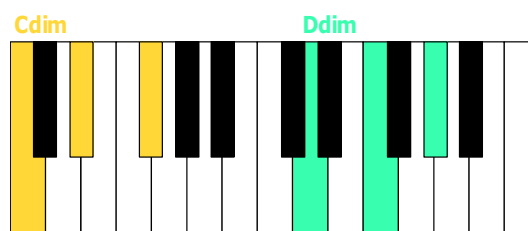


In a major scale, the second, third and sixth notes' chords are all minor triads. So from C major, you can make D minor, E minor and A minor triad chords.

Diminished

Transcription: ldim or l° (Cdim, D°, Fdim)
Spelling: 1 b3 b5 (C Eb Gb, D F# Ab, F Ab B (B))
Structure: root, minor third, diminished fifth
Named for: the diminished fifth

This chord is built on two minor third intervals between the root and the minor third, and the minor third and the diminished fifth. As such it's not a very cheerful chord at all, and it prefers to resolve to something else rather than carry the weight of any melody for too long by itself. The tritone interval that spans the chord also lends it that nifty floaty tritone quality.



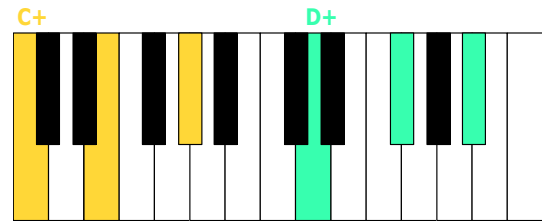
In a major scale, the seventh note's chord is a diminished triad. So for C (again), the B is a diminished because B is the seventh note of the scale of C major. (Count if you don't believe me. There's a little keyboard up there you can point at to count up.)

Non-diatonic tonal triads.. er.. triad

Actually there's just the one non-diatonic triad: the augmented one.

Augmented

Transcription: Iaug or I+ (Caug, D+, Faug)
Spelling: 1 3 #5 (C D G#, D F# A#, F A C#)
Structure: root, major third, augmented fifth
Named for: the augmented fifth



A chord that was meant for sci-fi, truly ruly. Replacing the perfect fifth of the major and minor triads we have instead a raised or augmented fifth. This chord likes to resolve down to a major chord with the same root for a sci-fi sound, or even a minor chord with a root a semitone above (Caug, C#mi). Or, if you're Wendy Carlos writing the TRON soundtrack, you treat the augmented chords as a perfectly legitimate sonority unto themselves and that's that.

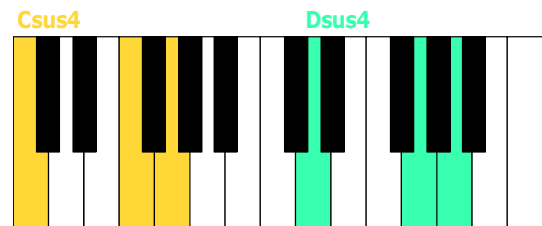
You might have noticed also that the augmented chord splits the octave evenly in half using major third intervals. This means that Caug, Eaug and G#aug are all enharmonic, i.e. they have the exact same notes as one another in a different order. This can be useful. There's only one other chord like this, and you'll meet it soon enough.

Non-tonal (suspended) triads

The next two triads introduce the use of major second intervals: notes which are only two semitones apart from one another. This interval can have a slightly discordant yet generally pleasant sort of rubbing, buzzing, fuzzing feel to it as the two side-by-side notes quietly jostle. They're both diatonic.

Suspended fourth

Transcription: Isus4 (Csus4, Dsus4, Fsus4)
Spelling: 1 4 5 (C F G, D G A, F Bb C)
Structure: root, perfect fourth, perfect fifth
Named for: the lack of a third, in its place is a perfect fourth

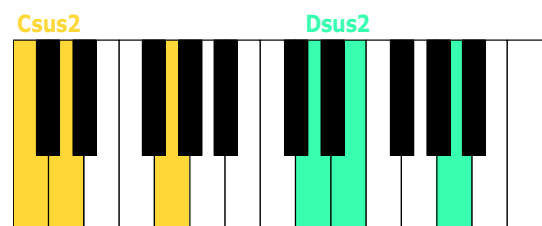


Suspended chords are chords without a major or minor third in them. They're called suspended because without the third to determine whether it's major or minor, it has a certain suspended neutrality about it which wants to resolve to something else. The suspended fourth is the more common of the suspended chords, and works pleasantly as a variant with the major.

The major scale allows you the notes to fourth-suspend its root, second, third, fifth and sixth chords. That means in C major you can have Csus4, Dsus4, Esus4, Gsus4 and Asus4 without using notes outside that scale. (Fsus4 uses a Bb, Bsus4 uses an F#.)

Suspended second

Transcription: Isus2 (Csus2, Dsus2, Fsus2)
Spelling: 1 2 5 (C D G, D E A, F G C)
Structure: root, major second, perfect fifth
Named for: the lack of a third, in its place is a major second



Like the sus4, this is another chord that you can put in place of the major for variety's sake. Some people say there's only one sort of suspended chord, being the suspended fourth, since you can spell the suspended second as a suspended fourth of the perfect fourth of the sus4's root note in first inversion, which in English means that Csus4 uses the same notes as Fsus2, but they're in a different order. Inversions will be touched upon later.

The major scale lets you have sus2 of its root, second, fourth, fifth and sixth notes. So in C major, that's Csus2, Dsus2, Fsus2, Gsus2 and Asus2. Esus2 and Bsus2 both use F# (and Bsus2 also uses C#).

Suspended chords are bloody useful in chord substitution because of their neutrality; if you don't want to use a minor chord because it's got all the subtlety of bare breasts painted fluorescent orange, go

with a suspended chord instead. Especially if it means creating a harmonic melody. More about those in a bit.

If you include both the suspended second and the suspended fourth at the same time, you end up with an inverted seventh suspended fourth, which is a most useful chord indeed. More about that sooner rather than later.

Seventh chords

Take a triad, add either a minor or major seventh on top of it, and you get one of many flavours of seventh chord. Seventh chords all have four notes, and come in many different tonalities and feelings. The seventh comes in five or so main flavours with perfect fifths (dominant, major, minor, minor/major, dominant suspended fourth), but once you start to augment or diminish the fifth the many possibilities start to unravel.

If you're going to use these chords, you may as well just resign yourself to experimenting to see what works. Most seventh chords don't fit neatly into scales, so it's by messing around with the seventh chords that you'll hopefully start to get a feel for the more esoteric harmonic colours that are possible with the addition or alteration of just one or two notes.

It's here that things will start to sound a lot jazzier, potentially, because jazz loves the hell out of its seventh chords.

Diatonic tonal seventh chords

These flavours of seventh all occur naturally in major and natural minor scales and are as good a place to begin as any. They all have four notes and they're all tonal, having a major or minor third in the hizzouse.

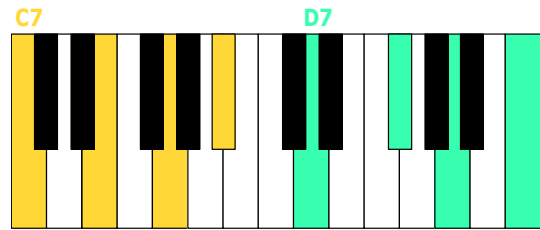
Seventh

Transcription: I7 (C7, D7, F7)

Spelling: 1 3 5 b7 (C E G Bb, D F# A C, F A C Eb)

Structure: major triad plus minor seventh

Named for: the minor seventh interval at the top



The bluesiest of all the chords is the seventh. A straight major triad with that minor seventh overtone to add a touch of melancholy to the proceedings, this is the hard-drinkin' chord.

It's often called a dominant seventh because it's based on the fifth (or dominant) note relative to the key you're in. Say you're in the key of D major and you pop in a A7 - you've used a dominant seventh chord and you're probably about to follow it with a D. That's what it's for. Traditionally, the dominant seventh is one way of telling whatever key you're working in, since a key only has the one dominant seventh (the other sevenths are either major sevenths or minor sevenths or minor seventh flat fifths). More on that when we get to progressions. Jazzniks know this one's amenable to mixolydian melodies.

If you're in a particular key and use a dominant seventh chord based on the minor sixth of your key (G# if you're in C, F if you're in A) before continuing onto the dominant seventh for your key (based on G if you're in C, E if you're in A), then you've just completed a harmonic manoeuvre called a German sixth. (Leave out the fifth in this chord to get an Italian sixth.)

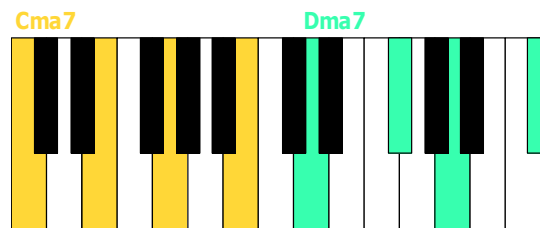
Major seventh

Transcription: Ima7 (Cma7, Dma7, Fma7)

Spelling: 1 3 5 7 (C E G B, D F# A C#, F A C E)

Structure: major triad plus major seventh

Named for: the major seventh (and sort of the major third too)



This jolly chord has a major seventh overtone which gives it a blissed out flavour, tailor-made for any sort of music which aims to inspire. One of my former personal favourite chords until I overused it. Still an old mate nonetheless. One for ionian melodies, this chord.

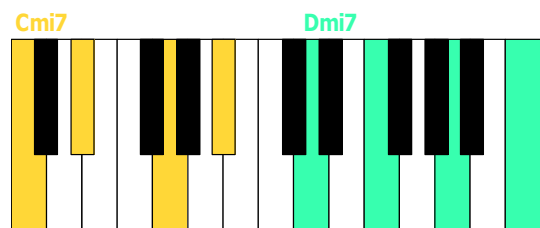
Minor seventh

Transcription: Imi7 (Cmi7, Dmi7, Fmi7)

Spelling: 1 b3 5 b7 (C Eb G Bb, D F A C, F Ab C Eb)

Structure: minor triad plus minor seventh

Named for: the minor third and the minor seventh



The moody and sophisticated minor seventh, much loved by drum 'n' bass producers when played on a Wurlitzer electric piano. Also one of my favourite barre chords on the guitar since you can form it with just one finger. This chord is fit to accompany the dorian mode.

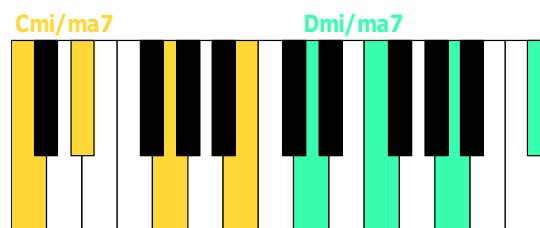
Minor/major seventh

Transcription: Imi/ma7 (Cmi/ma7, Dmi/ma7)

Spelling: 1 b3 5 7 (C Eb G B, D F A C#)

Structure: minor triad plus major seventh

Named for: the minor third and the major seventh interval

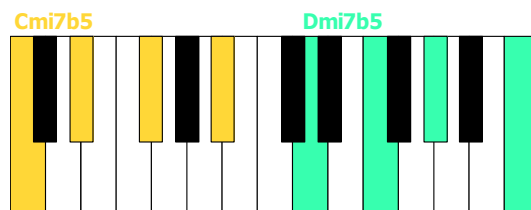


The chord that ate hope. Recalling the fruitier minor scale, the harmonic minor, this combines a stern major third with a suddenly evil major seventh. There's an awful, unseelie finality to this one, as though it wants to stay still and fidget at once. I blame the minor sixth interval. Jazzniks know this one as the chord over which you play in the melodic minor

scale.

Half-diminished (minor seventh diminished fifth)

Transcription: Imi7b5 (Cmi7b5, Dmi7b5)
Spelling: 1 b3 b5 b7 (C Eb Gb Bb, D F Ab C)
Structure: diminished triad plus minor seventh
Named for: it's a diminished seventh except that the seventh is only minor and not diminished, so the diminution is only half-done



This is a somewhat subdued, spooky, nowhereish kind of chord (it's that tritone again) and seems to work well alongside the minor/major seventh chord on the same root note. The traditional music theory use for this chord is a bit uninteresting but we'll get to that later this chapter. Jazzniks know this as a chord to accompany the locrian scale.

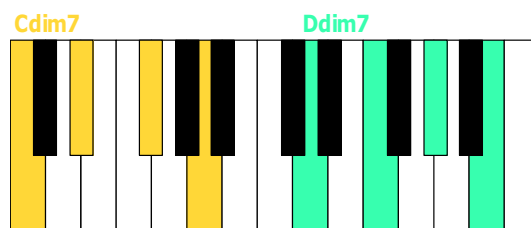
Non-diatonic tonal seventh chords

The following chords are seventh chords but operate outside major and natural minor scales. This is not an implicitly bad thing, because chromaticity is fun. Rather than saying "you should only use these chords if you absolutely mean to", just go and use them and in doing so find out how to use them.

'Cept this first one. The first one sounds all sophisticated but it's a teddy bear of a thing and bloody useful to be able to wield in a pinch.

Diminished seventh

Transcription: Idim7 (Cdim7, Ddim7)
Spelling: 1 b3 b5 bb7 [6] (C Eb Gb Bb, D F G# B)
Structure: dim. triad plus diminished seventh
Named for: the diminished seventh and the diminished fifth



The diminished seventh is a strange one, and reveals why the major sixth is enharmonic with a seventh interval. The venerable dim7 is made up of stacked minor thirds, and since you can break the octave up evenly into minor thirds.. well.. shenanigans even more shenaniganly than the augmented triad may ensue forth.

Basically, when you play this chord, you're playing four different chords at once. Let's take Cdim7 up there – that chord is enharmonic with (i.e. has the same notes as) D#dim7, F#dim7 and Adim7. Given that this is a chord with a dominant function, this means those four notes can resolve to a tonic chord of F (from Cdim7), G# (from D#dim7), B (from F#dim7) or D (from Adim7).

Ddim7, F is the minor third of D, G#/Ab is the minor third of F, B is the minor third of G#/Ab, and D is the minor third of B. It's a useful substitution for any minor seventh chord, and there's only really three of them if you only count the notes of the chord and not which order they're in. (Inversions again. Yay.) Chord substitution gets a looking over much later in the book, although it does bear quick examination in the next chapter. Jazzniks will know this as the chord you use with the whole-half diminished scale.

Interval-wise, it's two tritone dyads set a minor third apart, giving it that natty tritone floatiness along with a tension-filled dose of the sombre minor third. Generally, having a diminished seventh (enharmonic with – the same note as – a major sixth) in the same chord as a minor third interval makes for a whole lot of tension.

Seventh diminished fifth (seventh flat fifth)

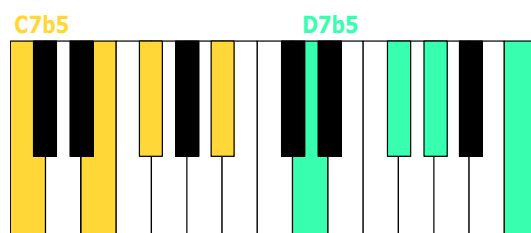
Transcription: I7b5 (C7b5, D7b5)

Spelling: 1 3 b5 b7 (C E Gb Bb, D F# Ab C)

Structure: root, major third, diminished fifth, minor seventh

Named for: the presence of the minor seventh and the alteration of the fifth

An odd chord to its odd core, made up of whole-tone scale notes with two major third pairs (one starting at the root and one starting at the diminished fifth of the root). Jazzniks will recognise this as a chord over which to diddle in the whole-tone scale, or the Lydian dominant scale since it's enharmonic to 7#11.



This chord substitutes well for a dominant seventh. If you're in a particular key and use a dominant seventh chord based on the minor sixth of your key (G# if you're in C, F if you're in A) before continuing onto the dominant seventh for your key (based on G if you're in C, E if you're in A), then you've just completed a harmonic manoeuvre called a French sixth. (Leave out the diminished fifth in this chord to get an Italian sixth.)

The whole-tone scale was a favourite stop-and-muddle-the-tonality device of Debussy, one of my favourite composers, and this chord is a versatile implementation of whole-tone. With any 7b5 chord, you're playing something that can function as two different chords – both whatever you're playing, and a tritone away from whatever you're playing: C7b5 and F#7b5 use the same notes (albeit in a different order, though that doesn't really matter as you'll see when you skip ahead, read about inversions and skip back).

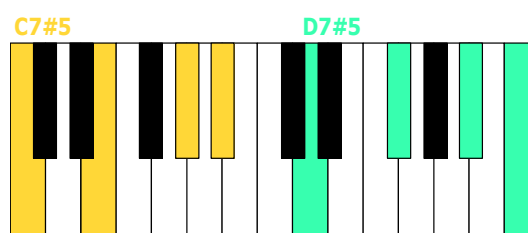
Seventh augmented fifth (seventh sharp fifth)

Transcription: 17#5 (C7#5, D7#5)

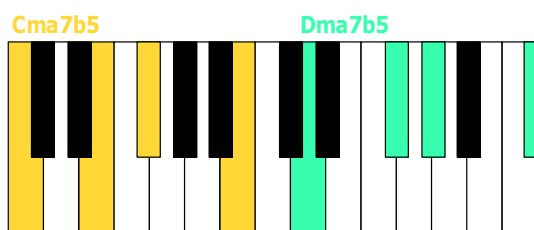
Spelling: 1 3 #5 b7 (C E G# Bb, D F# A# C)

Structure: augmented triad plus minor seventh

Named for: the same stuff as the last chord



Again using only notes from the whole tone



series, this is another fairly odd chord. Note the presence of the tritone between the major third and the minor seventh instead of off the root note. Note also that the two notes at the top of the chord are snuggling up to one another, only two semitones apart. Major seventh diminished fifth (major seventh flat fifth)

Transcription: 1ma7b5 (Cma7b5, Dma7b5)

Spelling: 1 3 b5 7 (C E Gb B, D F# Ab C#)

Structure: diminished triad plus major seventh

Named for: the major seventh and the altered fifth

Rather spooky from that tritone again, and not a chord that sounds like it wants to really do anything but float around in midair during the early hours of the morning bothering wandering cats with moans and wails. Jazzniks will recognise this as the Lydian chord, named for the Lydian scale from which it is derived.

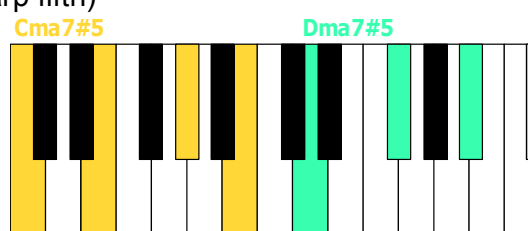
Major seventh augmented fifth (major seventh sharp fifth)

Transcription: 17#5 (Cma7#5, Dma7#5)

Spelling: 1 3 #5 7 (C E G# Bb, D F# A# C)

Structure: augmented triad plus major seventh

Named for: the same as the last chord



Not all that tonally different from the major seventh diminished fifth to my ears. These ones are slight! more subtle chords than I myself know how to use effectively. Jazzniks will recognise this strange little beast as the Lydian augmented chord, being as it's the same as the Lydian chord above except with an augmented fifth instead of a note enharmonic to a diminished fifth. Technically if you wanted to you could sound the augmented fourth note as well, but it sounds quite dense.

Non-tonal diatonic seventh chords

Yes, suspended chords come in a seventh flavour as well.

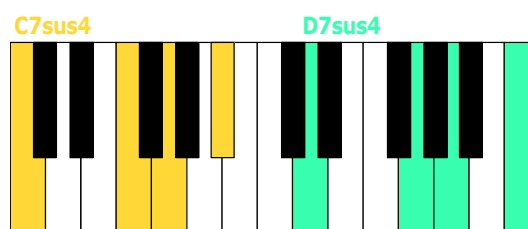
Seventh suspended fourth

Transcription: 17sus4 (C7sus4, D7sus4)

Spelling: 1 4 5 b7 (C F G Bb, D G A C)

Structure: suspended fourth plus minor seventh

Named for: the minor seventh interval and the suspension of the third to a fourth



The seventh suspended fourth is an odd beast among the sevenths: with no major or minor tonality but a relatively complicated set of relations between its constituent notes, it's an interesting sort of chord. To listen to a 7sus4 would seem to indicate that it precedes something, but it's hard to say exactly what. It's all aloof and sci-fi, and extremely useful as the sort of chord you can reach for in times of doubt.

The 7sus4, like the other suspended triads, can sub for sevenths with major or minor thirds as a way

to use the chord's root note without committing to whether it's major or minor. The resulting ambiguity can come in handy for duplicitous acts of modulating to different keys.

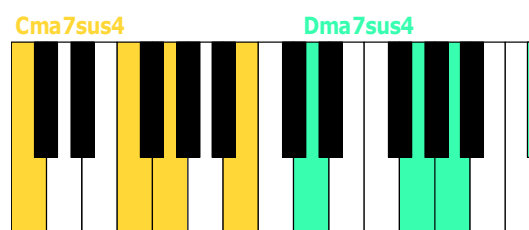
I went through a period of hammering the seventh suspended fourth chord to death and quickly tired of it, but i didn't get around to diminishing or augmenting the fifth or seventh notes too much. So there's still the possibility of a Cma7sus2b5 (that would be a C major seventh suspended second diminished fifth, or C-D-F#-B for short) but i've personally no clue when i'd use it. Alternating it with a Cma7 sounds lovely though.

Wait, no, that's more of a Baddb9. Though I suppose it depends on the harmonic function of the chord. I dunno.

Major seventh suspended fourth

Transcription: Ima7sus4 (Cma7sus4)
Spelling: 1 4 5 7 (C F G B)
Structure: suspended fourth plus major seventh
Named for: guess

Like the dominant seventh, this chord has a tritone in it which makes it float a bit. This is a severely fussy chord with limited usefulness, and the best way to find out exactly what it's good at is to take a look at Appendix K when you've got the afternoon free. It seems to have a hard time making friends.



Extended and altered chords

Extended chords are chords which extend up past the sevenths and include the ninth (but not the added ninth), the eleventh and the thirteenth intervals. Finding out what the actual notes are is quite easy: play the minor triad rooted a whole tone above your root note. Say your root note is F: Gmi has the notes G, Bb and D. So relative to F, G is your ninth, Bb is your eleventh, and D is your thirteenth.

All of the extended chords are based on sevenths and are named by the same convention. If you haven't picked it up, the (dominant) seventh has a major third and a minor seventh, the major seventh has a major third and a major seventh, and the minor seventh has a minor third and a minor seventh. So when you think of a major eleventh, remember that the "major" describes the major third and major seventh, and that the eleventh is always the same note until it gets altered.

You can alter the ninth by sharpening or flattening; the eleventh may only be sharpened (since if it were flattened it would end up being a major third) and the thirteenth may only be flattened (since if it were sharpened it would be a minor seventh). For jazzniks there is an actual chord called the altered chord which is spelt longhand as 7b13#11#9b9; the C altered chord would contain the notes C E G Bb Db D# F# and Ab.

With this many notes there are many variations, and much of the use of altered chords, conventionally speaking, is in chromatic voice leading. That's covered in its own section.

In all, there's fifteen variations on ninth chords with major or minor tonalities that aren't synonyms of other ninth chords. The most useful ninth chord i know is not one of these, being as it's built off a suspended triad chord, but we'll come to that chord in a while. Take a deep breath, and get ready to use five fingers.

Diatonic ninth chords

Like it says on the label. Not to want to completely recapitulate the section on sevenths.. but that's what's going to happen anyway.

Ninth

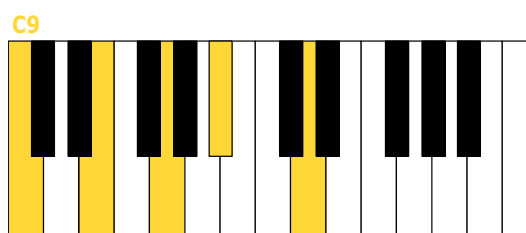
Transcription: I9 (C9)

Spelling: 1 3 5 b7 9 (C E G Bb D')

Structure: seventh plus ninth interval

Named for: ninth interval (minor seventh is implicit)

The plain old ninth is derived from the seventh and adds a ninth (second interval plus a full octave) on top. It's a C connected to a Gmi at the G. Bittersweet.



Minor ninth

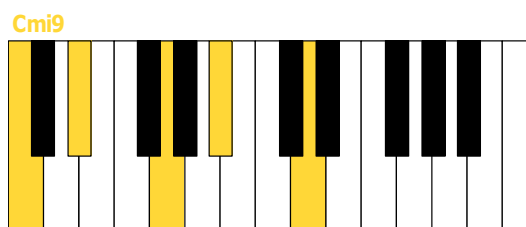
Transcription: lmi9 (Cmi9)

Spelling: 1 b3 5 b7 9 (C Eb G Bb D)

Structure: minor seventh plus ninth interval

Named for: minor third and unaltered ninth (minor seventh is still implicit)

The minor ninth is derived from the seventh and adds a ninth (second interval plus a full octave) on top. It's a Cmi and a Gmi connected at the G. Solemnly blissed out.



Major ninth

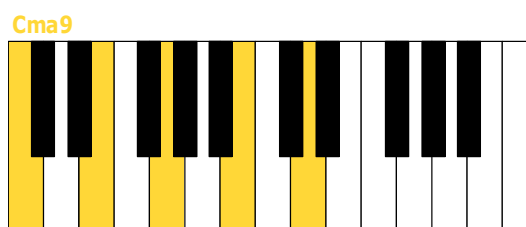
Transcription: lma9 (Cma9)

Spelling: 1 3 5 7 9 (C Eb G Bb D')

Structure: major seventh plus ninth interval

Named for: unaltered ninth, major third/seventh

The major ninth is derived from the major seventh and adds a ninth (second interval plus a full octave) on top. It's a C and a G connected at the G. Merrily blissed out.



Minor/major ninth

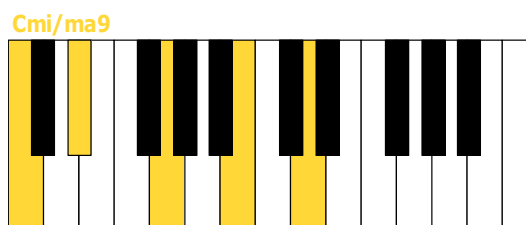
Transcription: lmi/ma9 (Cma9)

Spelling: 1 b3 5 7 9 (C Eb G B D')

Structure: minor/major seventh plus ninth interval

Named for: Minor third, major seventh and unaltered ninth.

As spirit-sapping as the minor/major seventh, but moreso!



Ninth suspended fourth

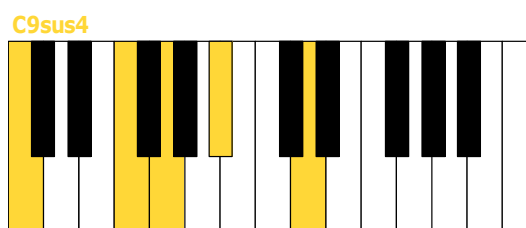
Transcription: l9sus4 (C9sus4)

Spelling: 1 4 5 7 9 (C F G Bb D')

Structure: seventh suspended fourth plus ninth

Named for: unaltered ninth, third suspended to fourth (implicit minor seventh)

This is a much more useful chord than its apparent obscureness would first let on, especially before a major with the same root note. It's like a major chord was invaded and annexed by the major chord of a whole tone lower. In the case of C, that's Bb - there's an entire inverted Bb chord in the C9sus4 in fact (F, Bb and D are the notes from left to right). So, use it well!



“Altered” non-diatonic ninths

You can add the ninth interval on top of all the other permutations of the seventh, as well as sharpening and flattening the ninth to taste. A sharpened ninth is enharmonic in tone to a minor third, even though you can have a dominant seventh sharp ninth and it still sounds great, and the flat ninth is enharmonic in tone to a minor second. Flat nines have a tendency to sound good as long as you're popping them on top of a minor seventh, i find, with the exception of the major/minor seventh which

sounds rather spiff indeed with a flat ninth on top of it.

Here's some examples of altered ninth chords to whet your appetite.

Seventh flat ninth

Transcription: I7b9 (C7b9)

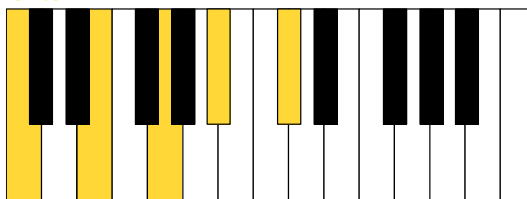
Spelling: 1 3 5 b7 b9 (C E G Bb Db')

Structure: seventh plus flat ninth

Named for: being a seventh chord with an altered ninth

This is a gossamer, gloomy chord which nibbles away at the souls of all who hear it (as opposed to the minor major seventh which takes big chomps). I quite like it. Jazzniks will note its relation to the half-whole diminished scale.

C7b9



Minor seventh flat ninth

Transcription: Imi7b9 (Cmi7b9)

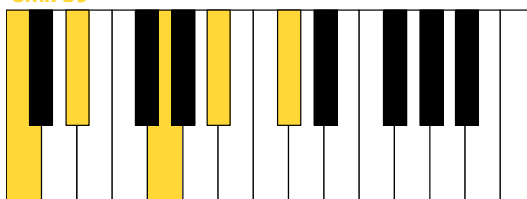
Spelling: 1 b3 5 b7 b9 (C Eb G Bb Db')

Structure: minor seventh plus flat ninth

Named for: being a minor seventh with an altered ninth

Quite likeably jarring. Again, a good replacement for the dominant seventh, sounding more like someone raising a large wooden club to whack you on the head with the root major.

Cmi7b9



Ninth diminished fifth (ninth flat fifth)

Transcription: I9b5 (C9b5)

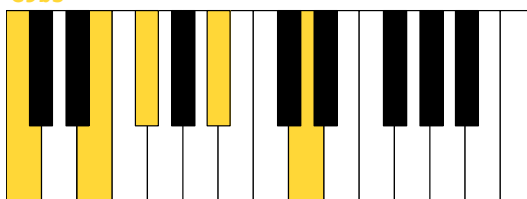
Spelling: 1 3 b5 b7 9 (C E Gb Bb D')

Structure: seventh diminished fifth plus ninth

Named for: the diminished fifth, plus the unaltered ninth (minor seventh is implicit)

Not quite so jarring. Again a good replacement for the dominant seventh, sounding like someone raising a conductor's thingy to poke you in the back of the head with the root major except more civilly than the minor seventh flat ninth which is a most uncivil chord indeed as you should have found out by now.

C9b5



Ninth augmented fifth (ninth sharp fifth)

Transcription: I9#5 (C9#5)

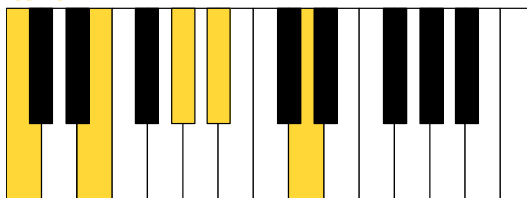
Spelling: 1 3 #5 b7 9 (C E G# Bb D')

Structure: seventh augmented fifth plus ninth

Named for: the augmented fifth, plus the unaltered ninth (minor seventh is implicit)

Does exactly what the ninth diminished fifth does, replacing the dominant seventh, except it's far sassier about it. Has an awesomely wistful tension to it.

C9#5



Seventh augmented ninth (seventh sharp ninth)

Transcription: I7#9 (C7#9)

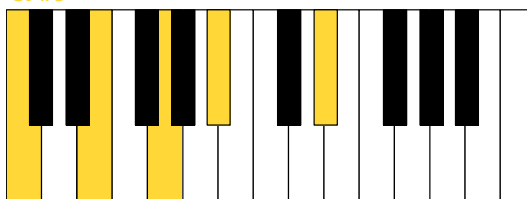
Spelling: 1 3 5 b7 #9 (C E G Bb D#')

Structure: seventh plus sharp ninth

Named for: being a straight seventh chord with an altered ninth on top

Does exactly what the ninth augmented fifth does,

C7#9



except it's sassier yet! They used this chord at the end of Animaniacs episodes sometimes in place of the dominant seventh. More famously, Jimi Hendrix played the hell out of this chord in his tune *Foxy Lady*.

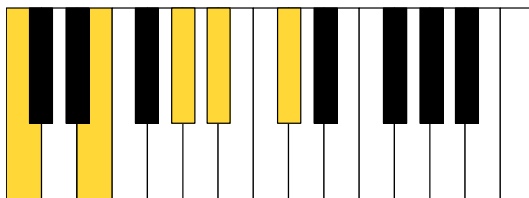
The sass in this chord comes from the chromatic distance between the major fifth and the augmented ninth. The chord has a split major/minor tonality, giving it an almost sarcastic sonority. Jimi knew it. Now you know it too.

Seventh flat ninth augmented fifth

Transcription: $17b9\#5$ ($C7b9\#5$)
 Spelling: 1 3 $\#5$ $b7$ $b9$ (C E G $\#$ B b D b)
 Structure: seventh aug fifth plus flat ninth
 Named for: what it says

Sad to say that while this one's pretty sassy, it's no match for the awesome cadencial power of the seventh aug ninth. You may as well make note of it anyway since having an alternative sassy chord to choose from can't hurt for variety's sake. Still, that seventh aug ninth is the bomb, isn't it? If you think this chord sounds better, i can't see what you see in it. But ok.

$C7b9\#5$

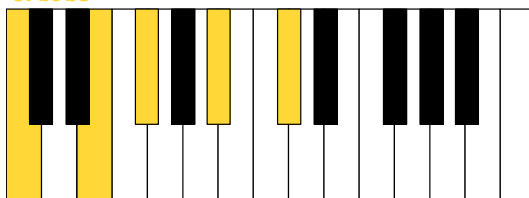


Seventh flat ninth diminished fifth

Transcription: $17b9b5$ ($C7b9b5$)
 Spelling: 1 3 $b5$ $b7$ $b9$ (C E G b B b D b)
 Structure: seventh flat fifth plus flat ninth
 Named for: you know, it's pretty late here

Sorry, this one isn't anywhere near as charming and sassy as those last three. Not all chords are created equal, it would seem.

$C7b9b5$

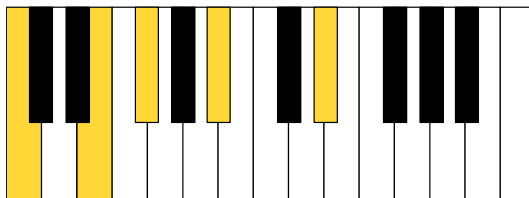


Seventh augmented ninth diminished fifth

Transcription: $17\#9b5$ ($C7\#9b5$)
 Spelling: 1 3 $b5$ $b7$ $\#9$ (C E G b B b D $\#$)
 Structure: seventh flat fifth plus sharp ninth
 Named for: you've probably got the hang of this too

Getting sassier, almost jazzy-sounding is this chord. Another head-smacker that just wants to resolve dominant seventh style to the root note, though it's definitely wearing a fedora and has a big cigar sitting in its mouth. Possibly even toting a tommy gun in a violin case as well.

$C7\#9b5$

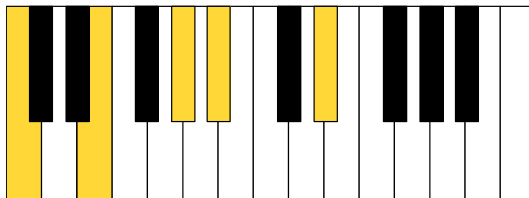


Seventh augmented ninth augmented fifth

Transcription: $17\#9\#5$ ($C7\#9\#5$)
 Spelling: 1 3 $\#5$ $b7$ $\#9$ (C E G $\#$ B b D $\#$)
 Structure: seventh aug fifth plus sharp ninth

This chord's almost consonantly tense enough to stand by itself, and in amongst all these other chords that just want to resolve, that's a rarity. Very tense is this customer.

$C7\#9\#5$

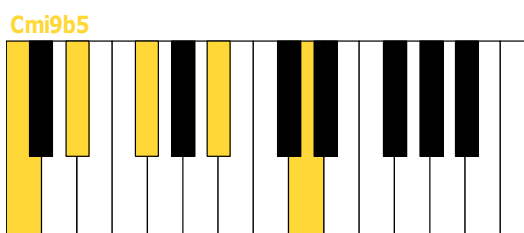


Minor ninth diminished fifth

Transcription: $1mi9b5$ ($Cmi9b5$)

Spelling: 1 b3 b5 b7 b9 (C Eb Gb Bb Db')
Structure: seventh aug fifth plus sharp ninth

OK. Look. This chord has a diminished fifth, and I don't for a second hold that against it. But somehow, this chord *seems* to function (at least for me) as a potential tonic. As in, other chords can potentially resolve to this one. This might be a good one to slip in as a substitute for a straight minor. It oozes apocalyptic style with a fruity sonority that's part-jazz, part-Hitchcock.

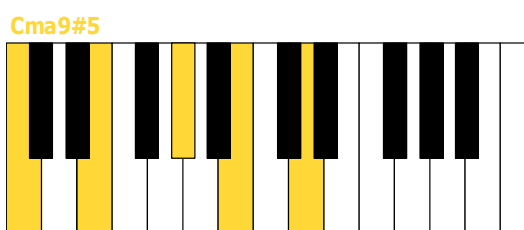


Actually, I think I might know what's going on with that whole sonority thing. If I haven't written about third substitution yet, I haven't explained it yet.

Major ninth augmented fifth

Transcription: Ima9#5 (Cma9#5)
Spelling: 1 3 #5 7 9 (C E G# B D')
Structure: major seventh aug fifth plus ninth

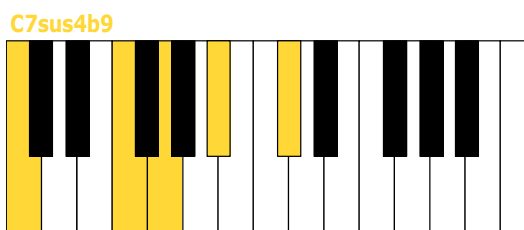
Other chords will do the job of this chord better than this chord can do its own job, which is pretty much being yet another dominant seventh replacement.



Seventh suspended fourth flat ninth

Transcription: I7sus4b9 (C7sus4b9)
Spelling: 1 4 5 7 b9 (C F G Bb Db')
Structure: major seventh aug fifth plus ninth

This jazzy chord is linked to the phrygian mode. It's quite likeable and floaty, if a bit difficult to wield, and seems to function nicely as a dominant-type chord.



There's more ninth chords than this but i'm so uninterested in them that i'll have to recommend you to a book to find out more about them. Really what it boils down to is that you can take any of the seventh chords in the previous section, pop an unaltered or altered ninth on top of it to taste, and voila. New chord.

And the same goes for eleventh chords. And thirteenth chords. Keep adding contrasting notes.

Elevenths and thirteenths

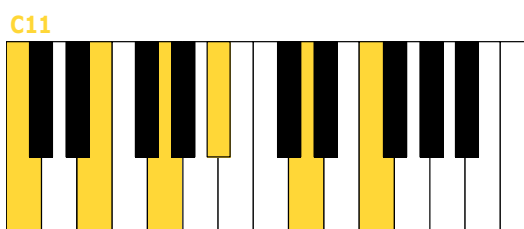
The eleventh series is most definitely in the realm of classical and jazz musicians than ordinary human beings. Knowing a bit more theory about how these chords best function against other chords will probably endear me to them a bit more, but as is they're just harmonically cumbersome and probably not worth knowing the theory of: stuff this esoteric is better discovered as needed. When i get over my fear of them and suss them out on my own terms, i'll be kinder. I'm sure.

Also it's late and my mind is confusing the word *eleventh* with the rather more charming word *elephant*. I'm sure i'd prefer elephant chords, even though it would take six trained elephants to play an eleventh chord in its full tonality.

Eleventh

Transcription: I11 (C11)
Spelling: 1 3 5 b7 9 11 (C E G Bb D' F')
Structure: seventh plus ninth and eleventh

This is a bigger and more harmonically complicated chord than i know what to do with. It's got a sort of drifty, floating thing going.



Major eleventh

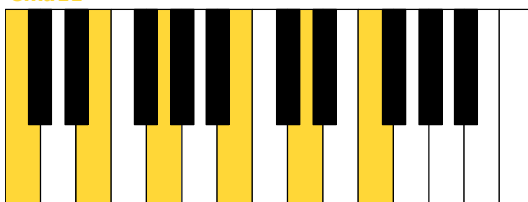
Transcription: Ima11 (Cma11)

Spelling: 1 3 5 7 9 11 (C E G B D' F')

Structure: major seventh plus ninth and eleventh

The usually benign major seventh interval forms the root of a diminished triad with the 9th and 11th here, adding wriggly tritone floatiness to this giant beast of a chord.

Cma11



Minor eleventh

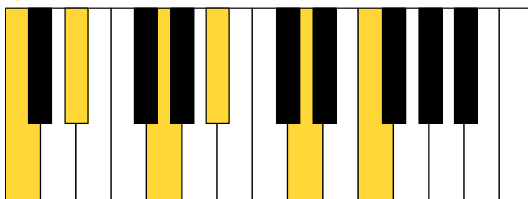
Transcription: Imi11 (Cmi11)

Spelling: 1 b3 5 b7 9 11 (C Eb G Bb D' F')

Structure: minor seventh plus ninth and eleventh

Of all the unfancy eleventh chords, this one is the most internally consonant sounding of them all and the one you're most likely to have use for.

Cmi11



Minor/major eleventh

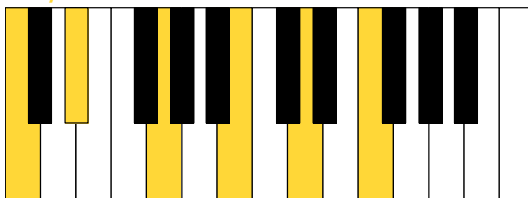
Transcription: Imi/ma11 (Cmi/ma11)

Spelling: 1 b3 5 7 9 11 (C Eb G B D' F')

Structure: major/minor seventh plus ninth and eleventh

The minor/major thing honestly gets pushed too far when there's an eleventh interval on top of it.

Cmi/ma11



There's no eleventh suspended fourth because the eleventh and the fourth are exactly the same tones. There's no real point in it.

Like ninths, you make up elevenths and also thirteenths by basing them on sevenths. Here's the basic thirteenth chords. I dislike them so much that I shan't even make up diagrams for all of them. It's common to leave out bits of thirteenth chords since they're so bloody full of notes.

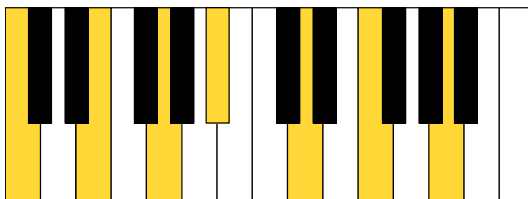
Thirteenth

Transcription: I13 (C13)

Spelling: 1 3 5 b7 9 11 13 (C E G Bb D' F' A')

Structure: seventh plus ninth and eleventh and thirteenth

C13



Major thirteenth

Transcription: Ima13 (C13)

Spelling: 1 3 5 7 9 11 13 (C E G B D' F' A')

Structure: seventh plus ninth and eleventh and thirteenth

Minor thirteenth

Transcription: I13 (C13)

Spelling: 1 b3 5 b7 9 11 13 (C Eb G Bb D' F' A')

Structure: seventh plus ninth and eleventh and thirteenth

Minor/major thirteenth

Transcription: I13 (C13)

Spelling: 1 b3 5 7 9 11 13 (C Eb G B D' F' A')

Structure: seventh plus ninth and eleventh and thirteenth

The most altered chord in the universe

The following chord is so barmy it deserves a category of its own.

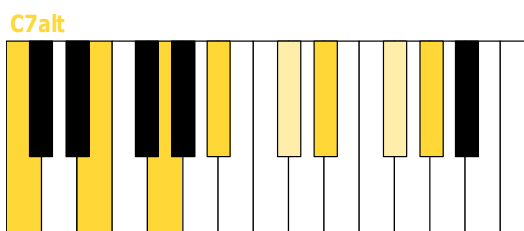
Altered chord

Transcription: I7alt (C7alt)

Spelling: 1 3 5 7 b9 #9 #11 b13 (C E G Bb Db D# F# Ab')

Structure: seventh plus all hell breaking loose

This is it. The jazziest chord in the world. This chord should mark the point where you seriously start thinking about leaving notes out of the chord for the sake of tidiness. Seriously. I recommend ditching the fifth, the flat ninth and the sharp eleventh myself. You won't miss them too much, because then you're left with the tritone between the seventh and the third (important to the harmonic character of the seventh), the major third interval between the root note and the third, and the sharpened ninth interval rubbing against the major third an octave and a bit away, plus the flat thirteenth note which is the upper boundary of the chord. That's about all the character it needs. Your own experience may vary somewhat.



Added chords

Added chords are chords which have extra notes added to them, such as the sixth, the added second, the added ninth, eleventh and thirteenth. They differ from extended chords in that you don't have to have all the notes underneath the added interval. Think of added chords as normal triads with a little extra harmonic spice. Jazzniks will know to add sixth and second/ninth notes to chords even when they're not specifically asked for, because it sounds smoooooth.

Sixth

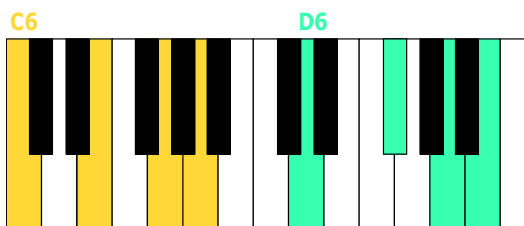
Transcription: I6 (C6, D6)

Spelling: 1 3 5 6 (C E G A, D F# A B)

Structure: major third plus sixth interval

Named for: the unaltered sixth on top of an implicit major triad

The sixth is a jolly and slightly smug sort of chord that has a secret drug habit. The peripheral sixth note means it doesn't quite resolve to a much more solid major triad, but lends it sort of a pompous flourish instead. A nice way to end a bossa nova chord progression, as Martin Galway may tell you of his *Wizball* high score music.



Minor sixth

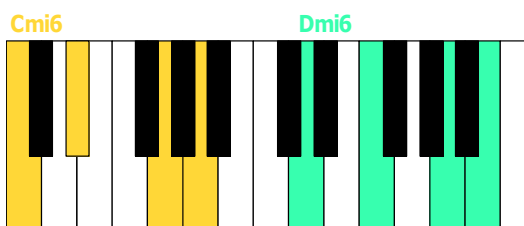
Transcription: Imi6 (Cmi6, Dmi6)

Spelling: 1 b3 5 6 (C Eb G A, D F A B)

Structure: minor third plus sixth interval

Named for: the minor third of the triad, plus the unaltered sixth

The minor sixth has that tritone interval between the sixth and the minor third, and as per all other tritone-containing chords this makes it somewhat spooky and brooding. It's also got a secundal interval between the perfect fifth and major sixth notes. Rub rub rub.

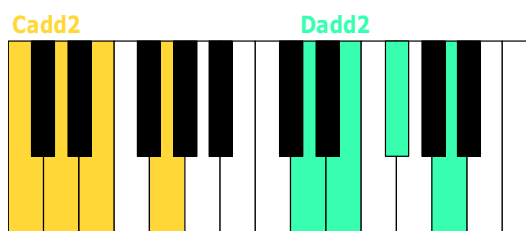


Added second

Transcription: Iadd2 (Cadd2, Dadd2)

Spelling: 1 2 3 5 (C D E G, D E F# A)
 Structure: major third plus second interval
 Named for: the second interval added to an implicit major triad

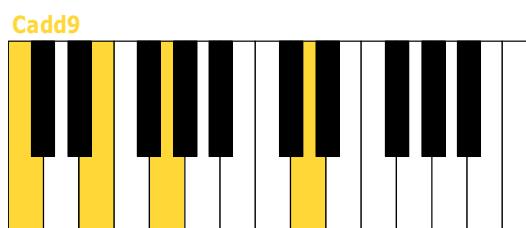
The added second sounds like a normal major chord but just a bit richer for having the second snuggled in between the root note and the third. The slight dissonance between the root, the second and the third is vaguely agreeable, i reckon.



Added ninth

Transcription: ladd9 (Cadd9)
 Spelling: 1 3 5 9 (C E G D', D F# A E')
 Structure: major triad plus ninth interval
 Named for: an implicit major triad that you've added a ninth interval to

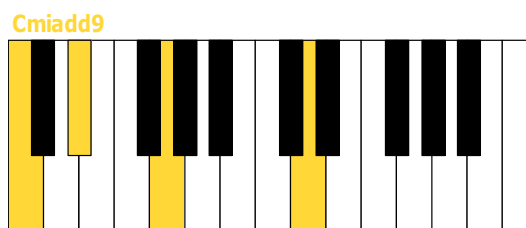
The added ninth chord is a major triad with a ninth interval floating over the top of it forming a fifth with the fifth note of the triad itself. It uses the same notes as the added second but with the second kicked up exactly one octave to form a ninth.



Minor added ninth

Transcription: lmiadd9 (Cmiadd9)
 Spelling: 1 b3 5 9 (C Eb G D', D F# A E')
 Structure: minor triad plus ninth interval
 Named for: a minor triad with a ninth interval added over it

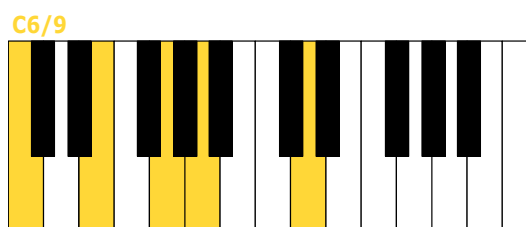
Quite depressing. The added ninth floats lonely as a grey cloud above the triad, a long way from anywhere, wanting to resolve somewhere but not having the energy to just get it over with. Poor ninth.



Six/Nine

Transcription: l6/9 (C6/9)
 Spelling: 1 3 5 6 9 (C E G A D)
 Structure: major triad plus sixth and ninth intervals
 Named for: the sixth and ninth intervals added over an implicit triad

When the sixth puts aside the seventh and brings a ninth along for company, you end up with a six/nine chord. Again with that floating ninth on the top it can be a pretty sparkly-sounding chord, and it's also got that smug sixth chord sound. Again, a nice variation on a simple major chord to end a song with.

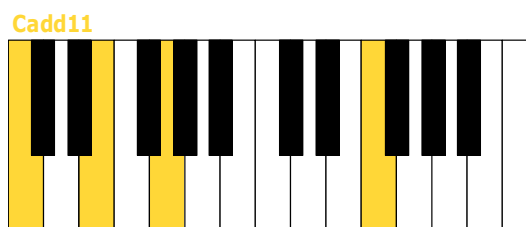


Added eleventh

Transcription: ladd11 (Cadd11)
 Spelling: 1 3 5 11 (C E G F', D F# A G')
 Structure: major triad plus eleventh interval

This is just an example of a chord i don't appreciate very much.

But.



Why does one **need** all of these chords? In this dictionary alone there are six triads, twelve seventh chords, sixteen ninth chords... that seems a lot if all you're familiar with is the four on a Casiotone keyboard (major, minor, dominant seventh, minor seventh). This is an easy enough question to answer: you **don't** need them all, but it doesn't hurt terribly to know that they're there. Lots of these

chords have specific useful colours of their own, subtly different to the other chords, and as such there's a massive range of different harmonic colours on offer which you can pick and choose from as you please.

And I like to think that given you know these many and varied sonorities are yours to do with as you please, you're more likely to go discovering other ones yourself. For instance, you might have noticed a distinct lack of minor seventh and minor ninth chords: go and meet them! :)

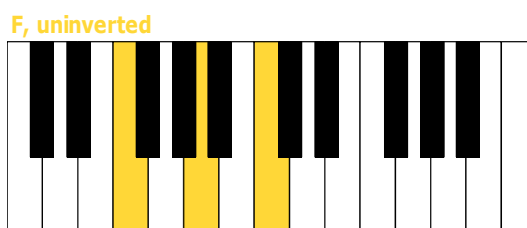
Inversions and fragments

Yes. Finally it's time to reveal all about inversions.

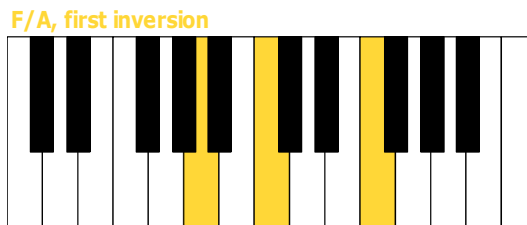
To invert a chord is to change the order of the notes around. In an inversion, the notes stay the same but their lowest-to-highest (effectively left to right) order changes.

If you don't want to spell the notes out, you can write down inversions in the form of a slash chord. Examples of slash chords are A/E, C/E and E/B.

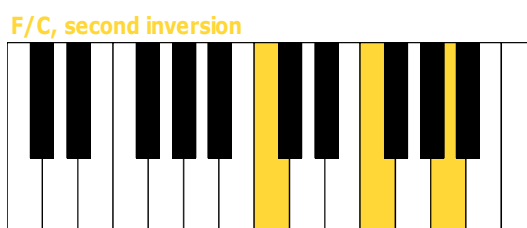
Take the humble F chord (F A C).



Its first inversion is A C F, spelt F/A (F with A as the lowest note)



and its second inversion is C F A, spelt F/C (F with C as the lowest note)



To transcribe inversions, first write the name of the basic chord, then a slash, then the name of the lowest note.

Describing an inversion in words is a different story: you can say 'A minor slash C' if you like, but tradition has it that you say 'chord, nth inversion' or 'the nth inversion of chord'. The number of the inversion tells you which note of the uninverted chord is the lowest (excepting the root note); A is the first note after the root in the chord F major, so the red chord in the diagram above is the first inversion of the chord F major. Similarly, C is the second note after the root in F major, so the grey chord is the second inversion of the chord F major. Chords with more than three notes can have more inversions than just two, for instance.

Y-nvert?

Because of the outside notes of each different inversion, they differ in tonality and therefore in use; by using chord inversions, you can tweak the feel of your chord while retaining its function. Uninverted, a major and a minor sound pretty vanilla; on their first inversion they acquire a sort of “tender”, emotional sound with the major/minor tonality on the bottom, good for those climactic moments. With the fifth on the bottom, the chords sound more subdued and grounded, like the musical breaks engaging at the end of a song.

When you move into the third inversion of seventh chords with the seventh as the low note, things start to get complicated-sounding and more interesting.

The best thing about inversions is that they allow you to morph from one chord to the other by using common or close notes, relatively speaking, and with that in effect your music becomes more tonally subtle and nuanced. There's potentially more of an obvious melody to be created from inverted chords, for instance. Go from C to F playing normal triads: the leap is quite huge. Go from C to C/F (C F A) and you save the calories required to move one of your fingers, because it can stay where it is.

You also move the two notes E and G up to F and A, a minor and major second interval respectively, which makes the F feel as though it's grown out of the C chord more.

A well known novelty hardcore tune in the early 1990s used the following inversion-laden chord sequence to quite nice effect here and there. See if you can guess which of the hundreds I'm talking about from playing these chords:

C	F/C	Dmi	G/D	
C E G	C F A	D F A	D G B	
C	F/C	Dmi	G7/D	C/E
C E G	C F A	D F A	D F G B	E G C

That's right: it's Sesame's Treat by the Smart Es. Now you've got no basis whatsoever to think inversions are too fancy, not if they turned up in a song whose main claim to fame was sampling the theme of a kids TV show. Go to it.

When is an inversion not an inversion?

A criticism that classical musicians like to level against jazz/pop notation (which is what I'm using) is that it's ambiguous with inversions and bass notes outside the chord. The reason for this is that they're written exactly the same way: if you want to play a C chord with an A bass note, you write it C/A. That's when an inversion's not an inversion. (Using bass notes under chords where the bass notes aren't part of the chords themselves will be discussed in a later chapter.)

Classical music's solution to this is to use a numerical system for notating chords, and the first time you see it you will run screaming just the same as I did. It's based on the intervals from the root note: C⁶₄ to them is C/G to us (the root note is assumed to be G, which is four notes down from C and six down from E), and C⁶₃ to them is C/E to us (by reasoning along similar but corresponding lines). It gets even uglier where sevenths and other extended chords are involved.

Fair enough though, if your brain works that way then by all means use that sort of notation. But don't ask me for advice on chord progressions if you do.

Chord fragments

You don't have to play the entire chord, even. You can leave notes out and retain a fragment of the chord.

A useful use of this technique would be dropping the perfect fifth of a seventh chord and maybe inverting it. You've still got the third giving it its tonality, and you've got the seventh on top of the third and the root conveying its seventhly flavour. As long as you've got a bass note playing the root note of the chord or something like it, people ought not be too confused about which chord you're playing.

G7(no 5)/F	C/E
F G B	E G C

Truly, some intervals characterise a chord more than others. The most important character-forming notes of the chord in terms of its intervals are, in order: the third; the seventh and any alterations; the root note; and finally the fifth. A perfect fifth is more or less expendable because it conveys not so much information as harmonic structure – if that fifth is altered (diminished or augmented, doesn't matter which), it conveys characteristic harmonic information about that chord and can't be dropped so easily.

If you want to go two-handed on your keyboard for a minute (presuming it's large enough), try playing a G down low and holding down B and F higher up. That's all you need to know to make out a G7.

Now fill in the G and D around the B and F to make the seventh chord. More obviously a G7 now, but hopefully you can hear that what's missing when you drop the root and fifth is obvious anyway, especially when you get the G from the bass part. You can go without.

Want to get really minimal? G in the left hand down low, F in the right a couple of octaves up. Play it. That's just two notes and it still has some of the character of the seventh because that's the seventh interval⁷. Is this impression enough character, though? That depends entirely on the piece, and whether you want that all-important third to set the tone.

And of course by leaving the all-important tonality-determining third out of your seventh chord (G low down, D and F two octaves up), you aren't committing to any particular tonality for the chord, giving it a certain hollow stability.

It can be fun to be as minimal as possible with fragments, especially in cases where your polyphony is limited – ukulele, chip music, harmonic singing, etc. It can be fun to see how little you have to do to evoke the harmony you want.

Chords in keys

For convenience's sake, let's think of keys as being synonymous with full diatonic major or minor scales. Each key provides a palette of notes to form melodies and chords from, and since this is the chord section we'll look at chords in a given key first.

Major keys and triads

I've mentioned this in the chord guide already, but now it's time to get even more

The key of C has the following notes: C D E F G A B C. Using each of these notes as a root note for a chord, and using only other notes from the scale, we can form the following triad chords:

major triads:	C	C E G	= I (tonic)
	F	F A C	= IV (sub-dominant)
	G	G B D	= V (dominant)
minor triads:	Dmi	D F A	= IIImi
	E mi	E G B	= IIIImi
	A mi	A C E	= VIImi
diminished:	Bdim	B D F	= VIIIdim

We can then group these triads into three harmonic groups: dominant, subdominant and root.

The dominant group, G, E mi and Bdim, are so named because E mi and Bdim share two notes each with the dominant V note G. The fifth is also known as the dominant, and it's this chord that resolves the firmest back to the root.

The subdominant group, F, Dm and Am, are so named because Dmi and Ami share two notes each with the subdominant IV note F. The fourth is also known as the sub-dominant, being as it is one note below the dominant, and it's this chord that carries most effectively away from the root.

The tonic group has only C in it, but C's such an important chord in its own major key that it deserves its own group. It's what all of these chords harmonically point to, in combination.

⁷ This be the stuff from which counterpoint is made. More on that later.

When you use a subdominant chord, the harmony travels away from the tonic, and when you use a dominant chord it travels back towards the tonic. Try playing a chord sequence starting with C, then use a couple of subdominant chords, then use some dominant chords and finish again on C. Then play the same thing backwards. The first one should sound much more definite and decisive in the way it ends, because dominant chords move back towards the key's tonic chord more decisively than do the subdominant ones.

For the ultimate in decisive endings, finish any chord progression with the V chord (G in this example) before slamming the I chord home (C in this example). Nearly all classical music does this, especially the final two chords of the last movement of a symphony. The V-I progression in a symphony, and especially the V7-I progression, is the audience's cue to awaken themselves and start applauding.

This V-I progression is called a perfect cadence. More about cadences shall be revealed in the chapter on chord progressions, including the reason i kept pointing out all the dominant seventh (V7) substitutes in the chord guide while i was covering the ninth chords. By the way, writing that bit did my wrists in so i do hope you appreciate it.

So for any key, the following can be said:

—the following chords are dominant and move towards the root harmonically: III^{mi}, V, VII^{dim}.

—the following chords are subdominant and move away from the root harmonically: I^{mi}, IV, VI^{mi}

Major keys and sevenths

The key of C still has the following notes: C D E F G A B C. Using each of these notes as a root note for a chord, and using only other notes from the scale, we can form the following seventh chords:

major 7ths:	C	C E G B	= I ^{ma7}
	F	F A C E	= IV ^{ma7}
dominant 7ths:	G	G B D F	= V7
minor 7ths:	D ^{mi7}	D F A C	= II ^{mi7}
	E ^{mi7}	E G B D	= III ^{mi7}
	A ^{mi7}	A C E G	= VI ^{mi7}

With the VII as root note you get a half-diminished seventh - in the case of C major that's B^{mi7b5}, B minor seventh flat fifth.

B ^{mi7b5}	B D F A	= VII ^{mi7b5}
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When would you use such a chord? I'm not sure myself. But for the sake of completeness, there it is.

Minor keys, triads and sevenths

Remember what i said about relative minors, how they're intimately related to their major scale? The chords available in a major scale are the exact same chords you get in the relative minor scale, except that in the minor scale another chord becomes important.

Let's see about A minor's triad chord palette, then. It should look pretty familiar, although note that the abstract designations of the chords have changed to reflect A as a root note. Note that the IV and V chord share the same tonality (i.e. major/minor status) as the root note's chord in both the major and minor keys.

minor triads:	A ^{mi}	A C E	= I ^{mi}
	D ^{mi}	D F A	= IV ^{mi}
	E ^{mi}	E G B	= V ^{mi}
major triads:	C	C E G	= bIII
	F	F A C	= bVI
	G	G B D	= bVII
diminished:	B ^{dim}	B D F	= II ^{dim}

As for the sevenths of A minor, it's the same story: the exact same chords of C major except with reassigned function within the A minor key.

minor 7ths:	A ^{mi}	A C E G	= I ^{mi7}
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	Dmi	D F A C	= IVmi7
	Emi	E G B D	= Vmi7
major 7ths:	C	C E G B	= bIIIma7
	F	F A C E	= bVIma7
7ths:	G	G B D F	= bV7
	Bmi7b5	B D F A	= IIImi7b5

Yet again, the chords can be classified into dominant and subdominant groups. To the dominant (V) group belong the Vmi chords Vmi and Vmi7 as well as the bIII chords bIII and bIIIma7 and the bV chords bV and bV7. To the subdominant (IV) group belong the chords IVmi, IVmi7, bVI, bVIma7, Ildim and IIImi7b5.

The characteristics of moving towards or away from the root that the dominant and subdominant have (respectively) also function for the minor key chords as they do in the major key.

Chords and modes

The way you can derive chords from scales, you can also derive palettes of chords from modes. The Ionian and Aeolian, aka the major and minor scales, we've just done, so let's see what other chords we get. In this table, you can also read any mi7 chord as a minor triad, any ma7 chord as a major triad, and any mi7b5 chord as a diminished triad. For instance, in the Dorian mode if you want a chord rooted on the fifth note, it can be either Vmi7 or just Vmi.

Dorian:	IImi7	IIImi7	IIIma7	IV7	Vmi7	VIImi7b5	VIIIma7
Phrygian:	IImi7	IIIma7	III7	IVmi7	Vmi7b5	VIIma7	VIIImi7
Lydian:	IIma7	II7	IIIImi7	IVmi7b5	Vma7	VIImi7	VIIImi7
Mixolydian:	I7	IIImi7	IIIImi7b5	IVma7	Vmi7	VIImi7	VIIIma7
Locrian:	IImi7b5	IIIma7	IIIImi7	IVmi7	Vma7	VI7	VIIImi7

Jazz takes this particular breakdown even further, citing chords enharmonic to the following for the C major scale: Cma7, Dmi7, E7sus4b9, F7b5 (or F7#11), G7, Ami7addb6, Bmi7b5. Spelling the chords very specifically lets the jazz player know which mode he's meant to be playing in. Or something.

The ebb and flow of tension and resolution

Moving away from and towards the root, along with the listener's expectations and mood, creates the tension dynamics of your music. Chord progressions get their very own chapter after all this formative stuff about what chords have what forms, what chords belong to a certain key and how to bend those rules to your own whim.

For now, let it be said that the flow of any music is based on tension and resolution. Any piece of music is a dynamic, dramatic, self-contained little world of sound, after all, be it classical or grunge or techno or whatever. If it moves you in some way through rhythm or melody or harmony, it's doing its job. It pushes and pulls you.

Soon, you'll learn how to animate the static chords in this chapter into a dynamic, moving creation. There's just one last administrative thing: how to write the chords down.

Transcribing chords

Transcribing what music you write (or music other people have written – reading is as important as writing!) means you can share it on paper without having to actually play it to someone else.

Abstract or key-specific transcription?

If you have the melody in front of you, write it down with the notes it's already in. If you want to go back and analyse it or transpose it, that's the time you want to be writing it down in something more abstract notation.

If you're writing down someone else's music to analyse it, make sure you get the outer notes right – that is, the bass note and the highest note of the chord (or chordal melody). The lowest and highest notes lend a lot of character to the harmonic colour at that moment, so those are the ones you not only want to get right, they're also probably the easiest notes to start with.

To spell or not to spell

If you're not sure what a chord is but you need to write it down anyway, spell it note for note. If you happen to write down the name of a chord wrong in some transcription only to come back and discover the chord progression you once loved now sounds horrible.. well.. better to be safe than sorry.

Nutchords really comes into its own here. You can spell a chord in it on its jolly little keyboard and it will tell you what chord you've got. Press the R key and it will invert that chord to show you how the first inversion of that chord would be spelt. Press it again and it'll invert the chord once more, telling you how that is spelt. Too easy.

Speaking of Nutchords: even if you don't know the guitar fretboard that well, try displaying and then manipulating chords on the guitar fret at the top of the interface. See what interesting variants you can find and then press the shift key to translate it onto the keyboard when you find something you like.

Transcribing music for analysis

This is how I do it. I'm very much a play-by-ear composer, so this may work for you or it may not.

You will need one notepad, DAW software, a MIDI controller and your favourite software synthesiser ready to go.

In the notepad, reserve five horizontal lines: one line for the part of the song you're analysing (e.g. "bit where choirs come in"), one line for the chord name, one line for the chord spelling, one line for the bass note and one line for miscellaneous comments.

Load the piece of music you want to analyse into your DAW. Have your soft synth loaded and ready to go. Make sure your MIDI controller can control your soft synth live.

Find the first one or two of chords of your song. Set them to loop. Figure out the bass note by matching the note with the soft synth. Write the note down. Figure out the high note by matching the note by playing over the top of it and write it down at the top of the chord spelling.

Then figure out the rest of the chord. If the bass note seems to fit it but the bass note is not the root note of the chord, try looking for the bass note in the chord as the perfect fifth or the third (major or minor).

If there's too many notes to figure it out, loop one chord only and slap a long clear reverb on it with no "dry" signal let though. This should smear out the fine detail and allow you to hear all the notes without the distraction of anything else.

Move ahead a couple of chords at a time. Make a note of where the piece starts repeating itself.

Atonalism and microtonality

This bit is entirely optional reading.

Approaches to harmony can get weirder. This is the 21st Century, and in the previous century people got vastly more experimental with music theory than mere elephant chords. Proceedings went from diatonicity to chromaticity to atonality to who knows where. We just left a crazy century for music, that's for sure.

A short, inaccurate and irreverent history lesson follows⁸, biased hard towards my favourite period in Western art music because that's when atonality all kicked off.

Tonality at snapping point

The musical pioneers in the era of the late Romantics and early Modernists (ten years or so either side of 1905) had composers like Debussy, Stravinsky and Schoenberg asking “where to next?”. Wagner had already dropped the almighty Tristan chord in the mid-19th century, continuing a steady erosion of classical harmonic language and moving it towards finely controlled dissonance and chromaticity. The sonorities in the music were growing more difficult and out there with the introduction of tritones and augmented fifths. The power of equal temperament was being fully unleashed, like some sort of Death Star.

Debussy's stated attitude was “pleasure is the only rule”, and so he wrote swooning pieces about bodies of water or mythological figures – pieces that occasionally started riots when they were being performed. (Paris can be like that.) He'd jump in and out of whole tone sonorities and jam on the previously forbidden tritone like it was nothing, making people scoff at these unlistenable modern music conventions. (If only those snooty bastards knew what was coming next...)

Debussy still has a fairly low barrier to entry compared to most composers – he's not trying to defibrillate the sonata⁹ for the millionth time. It's said that he liberated sonority from tonality – he was more interested in harmonic colours than worrying about what key he should have been in. He's the only composer i've ever tried to call on a telephone during a lucid dream to have a chat.

Stravinsky, he of the *Firebird* and *The Rite of Spring*, began stacking chords and unaligned phrases to create polytonality and polyrhythms. To be clear he wasn't the first human being to actually discover polyrhythms – African drumming has known about polyrhythms for yonks. Stravinsky ended up working in a field now called neo-classicism – the moves were often old school but a few new-school ones were thrown in for modern colour.

Still, Stravinsky (at first) and Debussy were both working within tonality of a sort, even if they were stretching it to breaking point - as opposed to Erik Satie who was writing ambient music for restaurants – except *Vexations*, that one's pretty out there. I wouldn't eat at a restaurant if the pianist was playing *Vexations*, put it that way.

Tonality finally snaps – atonality is born

Schoenberg and the Second Viennese School went even further, deciding that it was time to do away with tonality altogether. They did it, I suppose, because it was the right time for it to happen and someone had to go ahead and ask that question: what does music sound like when we deliberately stop using the notes to create traditional sonorities like majors, minors, sevenths, and so on?

They definitely found out. Schoenberg compared these newfound atonal sonorities to “breathing the air of another planet”. It's an acquired taste to actually listen to the stuff.

The problem is, they found themselves having to devise compositional methods like serialism and tone rows to keep themselves from lapsing into comfortable familiar tonal sonorities. The old

⁸ For a long, accurate and thought-provoking history of music, check out Leonard Bernstein's “The Unanswered Question” Norton Lectures from 1973. They're on YouTube but might not be by the time you read this; they are definitely available on DVD. Very long but bloody bloody good, especially once he gets to Wagner.

⁹ Sonatas are a conventional form for classical music, somewhat analogous to the standard issue pop song in its own genre. If you can't wait for a piece of classical music to finish and it's repeating the same bloody melodic phrase over and over again in different variations, you're probably listening to a sonata. Either that or Mozart. Possibly a Mozart sonata. You poor bastard.

sensibilities never stopped wanting back in. The conductor Leonard Bernstein pointed to the harmonic series and said, “No wonder they couldn’t resist it – tonality is innate.”

Much of the atonal music from the Second Viennese School is kind of unlistenable, but not all of it – later on in the century, composers were familiar enough with atonal sonorities to understand they’re just like any other sonority. Once the dust had settled and tonality wasn’t a dirty word anymore, many composers were taking a more eclectic attitude which continues to this day – and happily, part of that eclecticism includes atonality.

What’s worth listening to, then? Gyorgy Ligeti, definitely – “Atmospheres”, “Lux Aeterna” and “Aventures” you’ll already know if you’ve seen “2001: A Space Odyssey”. Penderecki’s *Threnody to the Victims of Hiroshima* is highly recommended for any noiseniks who think an orchestra can’t cut it for sheer noise terror. The more far out strains of acid house can be a good place to find atonal melody as well.

Microtonality

Did I mention that people started cutting up the octave into smaller pieces than 12 as well? As in, notes between C and C#?

No? Well, they did. This we call microtonality.

The human nervous system can definitely discern if there’s a pitch lying between C and C# so it’s not just a case of academics and audiophiles. At the moment microtonality is still pretty avant-garde and not that well known about, and its uses are somewhat limited.

Trying atonality and microtonality for yourself

Make no mistake: it’s hard to leave tonality behind. It just sounds *nicer*. But a full toolkit is a good one, so let’s give you a taste of some of atonality’s more generally useful tricks.

Microtonality and alternate tunings

If you’re going to make atonal music anyway, you may as well take it to further extremes and work outside equal temperament too.

If you want to have a play with microtonal tunings yourself, you should pick up a tuning program called Scala. It should let you output TUN files which you can then load into certain software synthesisers like Zebra 2. The TUN files override the internal tuning tables of the synths. It’s hard to describe exactly what microtonal tunings sound like, so your best bet is to experiment and see what you come up with.

Tone clusters

A tone cluster or cluster chord is what it says on the box – a cluster of notes. They’re referred to as a cluster because at least some of the notes are a minimal distance apart, at most a whole tone for diatonic clusters, and only a semitone for chromatic clusters.

You can hear a small chromatic cluster by playing C, C# and D simultaneously. For a slightly larger cluster, try C C# D with F F# G. For a larger tone cluster, try playing all the white keys from C to B simultaneously. For an even larger tone cluster, all the white AND black keys from C to B.

That jarring chromaticity can go all sorts of places – for instance, you can do things like put mini-clusters into triads - C D# E G is a C dyad (C and G) with both major and minor tonalities sounding at once. Why would you make a chord both major and minor? Because you can and besides which, it sounds hilarious.

Tone rows

If you start making tone rows, it’s already too late.

A tone row is an arrangement of the 12 notes of the chromatic scale in such a way that they don’t repeat, and this non-repetition can be inverted, reversed and permuted in other ways to create serialist music.

If you want to find out more about serialism, google it. I’m not writing another word about it. I don’t like

it enough to find out more about it.

Motion

With the dump of knowledge you've just had laid on you, writing a simple chord progression using triads and sevenths, sticking to a single key or mode, shouldn't present a challenging task. You know enough principles of harmony by now to write something listenable, whether you follow those principles or not.

At this point it's fair to say i've been pretty spare with regards to talking about melody. Melody isn't my forte, and to hear overt melodies in my own music when i'm not singing them is a rare thing indeed. The good thing about harmony is that once you know enough about it you can more or less fake melody by "connecting the dots" between specific notes in the chord progression.

Melodies often play with the chords obediently, just as they follow scales. Over time you can learn to bend those rules to make melodies more striking and interesting.

Writing chord progressions

I can prattle on until the cows come home about what chords are which in isolation, but unless you're playing drone rock there's no such thing as a chord in isolation. Chords in a sequence are called chord progressions, and these progressions take you somewhere.

I had a dream once where i was talking to someone about harmonies. It might have been Kevin Shields. He was talking to me about the contrast between bold, bright chords and slightly more introverted ones. The bright chords are the major and minor triads and their various different extensions, and the more introverted ones are where the fifth's been altered or the third's been suspended one way or the other. He said he liked to use the bright chords for impact and then use the introverted ones to carry things away again. I think.

Not every chord in the progression is going to have the same effect or impact as every other chord. That would be silly. Some chords are always going to hit home more than others; listen to any song and you'll sense that certain chords are more important to the story in the music than others. Other chords fill the space between those prime chords in interesting ways.

If you can't write a chord progression yet, i'm not sure how to explain how it's done, really. Maybe it's better that i don't explain it and let you just do what you like. There is the following to say all the same.

Stability and consonance

The most stable chord is whatever triad matches your key, the tonic triad. If you're in F major, that chord is the F triad. If you're in D minor, that chord is the Dmi triad. The tonic is your back to base chord, and it'll typically have a fairly big role to play in your song.

The second most stable chord in your arsenal, as hinted at before, is the dominant triad. In the key of F major, that's C. In C major, it's G. The subdominant is also fairly stable, though it will tend to want to wander off to something else. The secondary chords (read: anything bar the tonic, subdominant and dominant) are fairly unstable in their key and tend to want to move off somewhere else as well.

Even chords themselves can be stable or unstable. The most consonant chords are the major and minor triads: they have a root, a third and a perfect fifth. The root-third interval is quite consonant, and the root-fifth relationship is very solid.

Change the third to a suspended second or fourth and it becomes slightly less stable, though more portable since it can double for a major or a minor chord. When you start flattening or sharpening the fifth, however, the chord loses its most consonant element of all. Especially flattening the fifth makes life fairly interesting because it gives the chord a tritone interval; the tritone is very useful for its floatiness.

So if, say, you're working in a major key and you want to increase the instability of an already unstable chord to make the next chord sound even more stable, tinker with it to put a tritone in it, either by adding notes or altering notes which are already there.

Of course you can go in the opposite direction and hold unstable chords for a long amount of time. Then you get lots of build-up because these chords will be dying to resolve to something more stable.

Try it. Go play a 7b5 chord for a bit, then a 7b9b5 chord on the same root note for a bit, and then play a major triad afterwards. Feel that? It's the sound of relief. Tension, then more tension, then resolution.

Dynamism and chord relationships

Playing a progression of chords with similar notes isn't as dynamic as playing a progression of chords where the notes do vary a lot from chord to chord. A dynamic chord progression will always feel like it's going somewhere, which may or may not be the effect you want in any given part of the song.

Many patterns can be broken down to increments of semitones and whole tones, two quite elementary distances. Maybe the chord G resolves down to the chord C (in the key of C of course) more solidly than any other chord because the B note in G can be heard to "turn into" the note of C, which is the fundamental note of the key. One semitone up to get to that all-important progressing resolution. The D of the G chord can also be heard to rise up to the E of the C chord, which is a whole tone. Meanwhile, the G acts as a pivot point between the two chords, an effective link from one chord to the next. Just an idea.

Voice leading

An easy-ish way to form your chord progressions is to use voice leading to get you from A to B to C to D to E and back to A again. The voice in question is simply a melody charted through the harmonies of your chords. It could literally be a melody painted out boldly by a particular instrument against a harmonic backdrop, or it could be even more subtle than that. It could be a couple of melodies at once, resulting in a sort of counterpoint.. which gets explained in a bit.

Let's look at these chords for a starting point.

C	Dmi	Emi	Bb6/D
C E G	D F A	E G B	D E G Bb

There's a sequence C D E D, a sequence E F G F, and a sequence G A B Bb.. little melodies playing off one another. All quite audible in and of themselves they are.

Even the V-I or V7-I progression voice leads to an extent. The minor seventh of the V7 and the major seventh of the V lead into the root note very nicely being two semitones and a semitone away from it, respectively. The major seventh is also called the leading note, don't forget. The setup works.

In the IV-I progression, the perfect fourth leads to a major third a semitone downwards. In a VI-mi-I resolution, the major sixth leads to the perfect fifth. And so on.

Now i'm going to talk about the different sorts of resolution, some of which isn't technically resolution at all.

Resolution

I've been using the words resolve and resolution extensively throughout this document so far, so it would help to explain exactly what i mean.

Musically speaking, resolution can mean a couple of things. Generally it's about elements fitting against other elements, whether that fitting happens at the same time or from one musical moment to the next.

Notes resolving to harmony

It can mean how and whether a particular note fits into a harmonic structure (chord) or clashes with it. This can be thought of more as simultaneous matching of harmony and melody. For instance, the stray sharpened fourth note in the blues scale doesn't resolve properly with any of the chords used for the blues, so it strikes against the harmonies naturally and sounds interesting.

The list of notes outside of C E and G that resolve nicely with the C chord, given the criteria that you

should try to keep simultaneous notes at least a whole tone apart (and that you want to work in a diatonic and not chromatic system), is as follows: D, A, A#/Bb. That gives you a palette of six resolving notes, three of which will resolve directly to harmonic elements of the chord, and three of which will resolve for the reason that they don't clash with any other notes. If you want to stay strictly to the scale of C major, the Bb is out of the running too.

You're now left with five notes to play over the chord of C: C D E G A. Oh look, it's our old mate the major pentatonic scale.

If you want to use a melody with F or B over a C major chord and have the notes resolve to the harmony, get the note into the harmony of the chord and if you can remove any notes in the chord with which F or B clash. For instance, F is part of Csus4, and B is part of Cma7. (Play a B over the top of Cma7 and it's instant blissy territory.)

So. That's one sort of resolution explained and an early introduction to the next chapter about melody, the sense of resolution where melodies match, express and reinforce their harmonic base.

Harmonies resolving to a key

Pieces of music tend to be in a certain key. Once atonal composition took hold and took a perfectly good thing too far in the 20th Century under the likes of Schoenberg and Webern, this was no longer the case. Be that as it may, music that doesn't establish a fundamental or root note and some sort of tonality at any point is still vastly less common and easy to hear on the radio than music that does. All pop music resolves to a key. Electronic dance music (with the possible exception of certain older styles of acid and the newer styles grouped together under the heading of leftfield) does.

It's not hard to spot music that doesn't resolve to a key at all—whatever melody and harmony there is in it sounds unhooked and may even seem to be a series of almost random, disconnected, dauntingly toneless melodic and harmonic structures. It has a drifting quality and tends to not “get to the point”, at least not using melody or harmony.

Debussy's *Prelude to the afternoon of a faun*—highly recommended listening to anyone who's interested in hearing the philosophies of ambient music in the framework of orchestral composition, not to mention because it's a fantastic bit of music—has a quality of floatiness not too far removed from atonal and chromatic music, but it's not without resolution of any sort itself. The music changes its key with unprecedented speed and frequency to achieve its distinct quality as the lovely formless and floaty piece of music it is. Atonal music takes this philosophy of keylessness and enforces it much more thoroughly, deliberately avoiding diatonic harmony and leaving the main points of interest to be, for instance, permutations of the actual sounds of the instruments themselves. Webern for one made use of these *Klangfarbenmelodien* (timbre melodies) more statedly than most, and I'll come back to him later when melody itself is up for discussion.

Most music isn't as harmonically progressive and complicated as Debussy's or Webern's, however, and a key centre isn't usually too hard to find. Much of the time the very first chord in the piece of music will tell you the key of the rest of the piece, although over time it's been discovered that you can begin pieces of music in other more interesting ways and introduce the key properly later on. It's this central key in the form of either a chord or a simple note that notes and harmonies are anchored to, and the key brings resolution to the song. It's the tonal anchor of the song. You can usually whistle it as a note if you're intuitive enough.

In the form of its chord and its note, the key is intimately involved in the song's structure as long as it remains the key in use; keys can change within songs; there are ways of making the transition between keys smoother using the right set of chords, too. It's perfectly possible to pop into one key briefly and then shimmy back to the original key if that's what'll have the desired effect.

When a song gets back to its key chord, the harmony of the song is said to have resolved. When a chord in a song is followed by the key chord, it's said to have resolved (to the key chord). Resolution in this sense is relative to the key of the song; if you're in the key of C, C can't resolve up to F unless you make F the key and start using the F key's chords.

This sort of resolution is a series of harmonic choices that evokes a certain key.

Modulation

I hinted before that you're not necessarily stuck in one key all the time, and so it is during this expanse of key that I'll suggest how to get from one key to another. This is called modulation, and traditionally there's a few different ways of doing it. But why would you want to modulate?

You'd want to modulate for the simple reason that staying in one key can be very boring, and modulating liven things up a bit.

You've probably already done some key modulation yourself; not caring that Bb isn't part of the key of C major, you've probably followed C with Bb (without being in the key of F major) because it sounds good. The Bb chord is one of the chords of C minor, however, and in this day and age you can change between major and minor keys with the same root note without causing very much confusion. Swapping between major and minor keys is such an omnipresent practice these days that it doesn't sound as striking as it once might have, but it still does sound a bit special.

C	C6	Ami	Bb	C
C E G	C E G A	A C E G	Bb D F	C E G
			<i>modulate to C minor</i>	<i>modulate back to C major</i>

Direct modulation

Direct modulation's the easiest sort of modulation there is. You just go into your target key without bothering to anticipate it very much. Key changes in much 1980s pop music are a prime example of this technique.

Modulating from the key of C to the key of D directly could go something like this

C	F	G	C	D
C E G	F A C	G B D	C E D	D F# A
				<i>modulate to D with no anticipation</i>

When you hear that D, it's clear we've just jumped into a different key. It's made even clearer once you start using chords that are part of the key of D major but aren't part of the key of C major. Examples of such chords are F#mi, A, Bmi and Cdim. (C and D major share the chords Emi and G.)

Pivot modulation

Pivot modulation is the more flowery way of heading from one key to another. You pivot by using chords in your progression which exist in both your starting key and your target key.

One way this is done is by following the circle of fifths

So say if we want to get from a C chord in the key of F to an E chord in the key of E. We follow the circle of fifths.

C	G	D	A	E	E6
C E G	G B D	D F# A	A C# E	E G# B	E G# B C#
		<i>modulate to D major</i>		<i>modulate to E major and resolve key with E majorish chord</i>	

Each of those chords is rooted on the fifth of the root to its left, as you can clearly see in the furinotes unless you've been drinking in which case I wonder why you're reading this. This is called dominant pivot modulation since the other term for the fifth is the dominant note.

We aren't restricted to using just dominant pivoting though. We can also pivot using fourths; this is called subdominant pivot modulation. Let's visit Ab using this method.

C	F	Bb	Eb	Ab	Ab6
C E G	F A C	Bb D F	Eb G Bb	Ab C Eb	Ab C Eb F
		<i>modulate to Bb major</i>		<i>modulate to Ab major and resolve key with Ab majorish chord</i>	

Each of the root notes of the above chords is the sub-dominant note of the chord root on its left.

Now the above two examples are pretty linear. We're going directly to the root chord of the target key and adding a sixth chord substitution afterwards to cement the identity of the key. Substituting gets covered later.

We can announce even more loudly that we've arrived at a particular key by using the dominant seventh chord in a IV-V7-I chord progression in the target key. In the following example, B7 is E's dominant seventh. It needs to resolve to E or it will explode! (That happens to it sometimes.) In the following progression, D major and E major share the chord A, so the key is slightly up for grabs at A. It's definitely not C major or G major, and given that we've seen a D chord the A could very well be part of D major. This is how you're most likely to hear it, in fact. Following the A chord with a B7 chord locks the working key into E major, since only E major can lay claim to that particular chord.

C	G	D	A	B7	E	E6
C E G	G B D	D F# A	A C# E	B D# F# A	E G# B	E G# B C#
		<i>in D major here</i>	<i>ambiguity</i>	<i>modulate to E major and resolve key with E majorish chord</i>		

Actually, that V7-I progression sounds really mothballed, doesn't it? We're definitely sophisticated enough to be able to handle something a bit more interesting, something that obviously crosses the major/minor keys..

C	G	D7	E
C E G	G B D	D F# A C	E G# B
		<i>ambiguity</i>	<i>resolves to E major</i>

At that ambiguity, we're potentially in both G major (since D7 is part of the G major scale) and E minor (since D7 is also part of the E minor scale). Since it's OK to modulate between E minor and E major directly, that chord progression works.

The following modulation's slightly cleverer but works by the combination of normal direct modulation, wanton direct major/minor key modulation and the relative minor key.

C	D	B	B7	E
C E G	D F# A	B D# F#	B D# F# A	E G# A
	<i>d. mod to D major</i>	<i>d. mod to B major</i>	<i>targeting E major</i>	<i>resolution at E major</i>

As i hope to have taught you, B minor is the relative minor key of D major. Both keys use exactly the same notes. One way to tell this is that the middle note of the D major triad, F#, is also the top note of the B triad. This note forms a sort of pivot making the transition from D major to B major less jarring.

Summing up modulation and resolving to a key

As with everything in music theory, no amount of theory can tell you what you'll like. Pretty much every theory book you can lay your hands on will mention the V7-I chord progression, even though it sounds limp and tired. It definitely puts you in a key but there's just so many other more interesting chords you can use. Rrgh. Those chords will be covered when i get to substitution, in the chapter on permutation.

Go and listen to Debussy's *Prelude to the afternoon of a faun* if you haven't already. See how much this song changes key? Within a few seconds of establishing a key it's fluidly and perfectly found its way over to another one. This harmonic floatiness from a lack of regular key is definitely something that Debussy definitely has in common with the atonal and serialist composers, and was something that made it initially difficult for him to hold performances without being bagged by narrow-minded twats of critics. Perhaps i'm just as narrow-minded a twat to some for repeatedly slagging off Schoenberg et al, but Debussy found his way onto the soundtrack of *Ocean's 11* (that would be *Clair de Lune*, the orchestral music that's playing when they're all looking at the fountain after they've pulled off the heist) and Schoenberg didn't.

Come to think of it, the very same piece also makes an appearance during the movie *Dog Soldiers* as well.

Now for a wee tip: there's a chord called the diminished seventh (spelt 1 b3 b5 6) which is invaluable when modulating. It is a universal modulation adapter. It is harmonic axle grease. Being such an unstable chord, it resolves to almost any chord you can handle with a minimum of fuss. I've tested it and can vouch for its results.

And that brings me to the third sort of resolution: chord to chord resolution.

Chords resolving to other chords

Different chords have differing amounts of a quality that's often called stability. You may have noticed that in the chord guide I inferred that some chords are more stable than others. Stable chords are usually bold and free-standing affairs, the real meat of the song. Unstable chords, with which modern jazz is absolutely infested, seem to want to go somewhere else. They have a tension to them that seems to set up another chord. Then again, even relatively stable chords can set up another chord.

Harmonically unstable chords like the diminished seventh are often useful in the capacity of carrier chords. Carrier chords take you along to the next chord, and the more unstable ones often have the seeds of their own harmonic self-destruction inside them due to dissonant interval relationships. An effective carrier chord helps to accentuate the chord that comes after it in an interesting way while contrasting against the previous chord in an interesting way too. Carrier chords can be used cleverly to make harmonic progressions wiggle interestingly to all sorts of strange places.

Dwelling on an unstable carrier chord creates tension, and a nice stable landing chord like a triad or unaltered seventh afterwards releases that tension. That much jazz is made up of so many unstable chords should explain to some extent why it sounds as flighty and restless as it does.

The most stable of all chords in any key is the triad which shares the tonality and root note of your key. If you're in E major, it's E (E G# B). If you're in D minor, it's Dmi (Dmi). You can carry to this, the final landing chord of its key, in many different ways.

One uninteresting way to carry to the tonic chord which you've already been introduced to is the V7-I progression. G7, C. E7, A. B7, F#. Dominant seventh to tonic.

The V7-I progression is a twist on the perfect cadence, V-I. So let's talk about cadences and dominant seventh chords.

Cadences and carrier chords explained

A cadence is a two-chord progression where things get stable. It's either a resolution to the root chord or something that pretends to be and then surprises you.

Cadences have been around long enough to have been systematised slightly. The *perfect cadence*, already introduced to you in a previous section, is any V chord resolving to the I chord. So if you're in C, that would mean any chord with G as a root being followed by C (either just C or Cmi, or if you're feeling fruity C6/9).

The *imperfect cadence* goes in the opposite direction, from I to V chords. The *interrupted cadence* starts with a V and goes anywhere except for the safe predictable I chord; it's called the interrupted cadence because it's as though the masterful perfect cadence were interrupted.

The *plagal cadence* is the IV chord resolving to the I chord. If you're in C, that means any chord with F as a root being followed by C. In G that would be a C chord resolving to G. In D, that would be a G chord resolving to D. It's a slightly more understated resolution than the mighty perfect cadence, but a useful one to use sometimes all the same when it's not quite time to pull out the old V-I. It's sometimes called the "Amen" cadence because Christian prayers set to melody often feature this cadence on the last line of the prayer. (It has nothing to do with the Amen break, being as the Amen break was from a song called *Amen Brother* by the Winstons.)

The *deceptive cadence*, so called because at one point music was so horribly predictable that people took aberrances on its established rules as tantamount to treason punishable by being made to bare one's bottom to red hot pokers, is a V chord that resolves to the minor VI chord. In C, that would be from G to Ami. In F, that would be from C to Dmi. In D, that would be A resolving to Bmi.

Now the perfect cadence is the most forceful of these, so it makes sense that this would be the one that gets the most varieties. What I didn't expound upon earlier is that even in traditional harmony—subject to an easy-to-follow rule and one exception—you can stick dominant sevenths nearly anywhere you like.

What I'm about to show you here properly belongs with the chord substitution stuff in chapter six, being as it deals with horizontal tweaking, but it won't hurt to bring some of the science forward on you.

When you use the dominant seventh of whatever key you're working in, that's just a boring old dominant seventh. But when you start using dominant sevenths from outside that key to boost the presence of other chords, you're entering the realm of secondary dominant seventh chords.

Let's say we're in the key of C, and we have a chord progression that goes

C	G	Dmi	F	(C)
CEG	GBD	DFA	FAC	CEG

The secondary dominant rule says that you can lead into any chord (except for the VII in a major key and the II in a minor key) using the relative dominant seventh chord of the root note. To lead into the Dmi, we first have to work out what the dominant note of D is. It's A. Therefore, this rule allows us to follow G with A7 before leading into Dmi.

This leaves us with

C	G	A7	Dmi	F	(C)
CEG	GBD	AC#EG	DFA	FAC	CEG

and now this progression now sounds rather j-poppish. Leading into the F with C7 sounds quite odd. Leading into the G with D7 sounds rather odd, like i'm modulating from one key to another.

That's the traditional rule for using dom 7th chords. Given that it's the 21st century and that particular secondary dominant seventh rule has been flogged to death, let me dissuade you from using that particular substitution formula with any strictness. It sounds naffy classical and European. Better to put the dom 7th somewhere it sounds a bit odd.

Leading into the F with D7 for instance sounds nicely striking! But sometimes you need something a shade different to either smooth things over or ruffle them up. For instance, now that i've got

C	G	Dmi	D7	F	(C)
CEG	GBD	DFA	DF#AC	FAC	CEG

i notice that the D7 is a bit too close to the Dmi to really carry the harmony along. So now it's time to try swapping things in for the dominant seventh. Mainly it's the switch from minor to major third that sounds a bit shite, so my first instinct is to start suspending the minor third of Dmi to either a fourth or a second in the seventh chord that follows it.

First candidate on the list is my good old mate the seventh suspended fourth:

C	G	Dmi	D7sus4	F	(C)
CEG	GBD	DFA	DGAC	FAC	CEG

Now that's a fine harmonic progression right there. Let's get adventurous.

C	G	Dmi	D7-	F	(C)
CEG	GBD	DFA	-b5sus2	FAC	CEG
			DEAbC		

That's right, a D7b5sus2, or a seventh flat five suspended second. Nutchords informs me that its simplest name is E7#5 - both chords use D E Ab and C. Let's try something else.

C	G	Dmi	Dma7-	F	(C)
CEG	GBD	DFA	-#5sus4	FAC	CEG
			DGA#C		

OK, that sounds slightly over the top. But try whipping in some of those sassy ninth chords where that dom seventh was and it sounds more than groovy.

What i'm getting at is wherever you can put a dominant seventh without it sounding horrible, there's heaps of other chords you can use to varying degrees of success in the same spot.

So. That's what a carrier chord is: one fairly unstable chord, often using notes outside what's common in the current key, that (eventually) resolves onto another more stable chord while doing its bit to make the harmony more interesting. If the carrier chord contains notes from both the chord that precedes it

and the chord that follows it, it's called a passing chord. I'll get back to you with an example later.

Chromatic voice leading with altered chords

You might have noticed a lot of chords in section 3 with altered fifths and ninths. It's only recently that I was flipping through one of my books when it struck me exactly what those many altered chords are for, and that there was a word for this thingy where notes from one chord set up another. Voice leading is where notes lead into one another from chord to chord. It's chromatic when the chords ignore which key they're in and use whichever notes they like. Remember the chromatic scale? Go and check back on the scales chapter if you've forgotten it.

Conventionally, chromatic voice leading works a bit like this: you've got your first chord, and you can either sharpen or flatten your chord's fifth or ninth, or sharpen your eleventh or flatten your thirteenth. For the sake of sanity and to keep my derision of chords with more than five notes a bit consistent, let's just stick with the fifth and ninth notes. Much easier.

Let's start with the fifth. Depending on whether you flatten or sharpen the fifth determines which note you lead to. Flattening the fifth conventionally leads downwards, and sharpening conventionally leads upwards. Here's two examples with the leading sequence underlined from chord to chord as it rises semitone by semitone.

C C E <u>G</u>	C7b5 C E <u>G\flat</u> B \flat	F <u>F</u> A C
C C E <u>G</u>	C7#5 C E <u>G\sharp</u> B \flat	F <u>F</u> A C

In both cases here, it's the ubiquitous V-I progression again. (It's not going anywhere, so you'd better just learn to like it.) So the flattened fifth in the C7b5 leads to an F, and the sharpened fifth in C7#5 leads up to an A. Conventionally speaking.

What other chords have Fs and As? Think mainly about triads here; altered chords are quite unstable and need something firm to land upon though you might like landing them on suspended sevenths or other altered chords if you're feeling perverse.

Let's see.. Dmi and B \flat also contain F as a minor third and perfect fifth respectively, and Dmi and Ami both contain A as a perfect fifth and root note respectively. You can thence lead to those various triads using the appropriate altered version of C.

Altering a ninth degree is also possible.

C7 C E G B \flat	C7b9 C E G B \flat <u>D\flat</u>	F <u>F</u> A <u>C</u>
C7 C E G B \flat	C7#9 C E G B \flat <u>D\sharp</u>	Fma7 <u>F</u> A C <u>E</u>

Yeah, that last one is a bit of a stretch. Sounds alright to me though. Another use is

C7 C E G B \flat	C7#9 C E G B \flat <u>D\sharp</u>	D <u>D</u> F# A <u>D</u>
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Now you've probably noticed that the C7b9 is a bit internally weird. It's got a C and a D \flat in it, and those notes are only a semitone away from one another. They grind. They make the chord really really unstable and give it some of the same bittersweetness that makes the major seventh sound so yummy.

More on chord progressions

As I've already hinted if not outrightly declared in my discussion of chords and keys, certain chords are more important in a chord progression than others are. The fundamental or root chord, that which carries the tonality and fundamental note of the operational key, is the most important. The IV and V chords (whether major/minor, seventh, added-to, etc) establish the key along with the fundamental or root chord. The remaining chords in the key will also play a role, but it's generally those three chords that are the ones which take charge in the song.

Especially in pop music.

So many pop tunes can be played with little more than the old I, IV and V chords that books have been written with titles like *Play All These Songs With Just Three Chords*. And the books even live up to that rather strange-sounding promise. They're bold, bright chords. Pop music is often bold bright music which needs bold, bright chords to have its intended effect: to catch your attention, get stuck in your brain and compel you to download it off the Internet because you'd rather spend your money on something actually worth buying like a Cocteau Twins album. I recommend *Heaven or Las Vegas*.

Truly. You can go off and play the I, IV and V chords in any combination you like and discover how head-nobblingly done to death they are in your own time after i give you a map of the twelve bar blues. You already know from a previous chapter which chords in the major and minor keys go with them, that the subdominant takes the harmony away from the root and the dominant brings it back again, and all that stuff.

What happens when you don't include the root chord too often but still use other chords from the same key? What happens then? Eh? Eh?

If you write a chord progression without either the IV or V chords though, it won't sound all that odd unless you drop the I chord. It's only once you don't use the I chord often enough that things can beg for resolution. New Order's *Bizarre Love Triangle* only resolves to its root chord once every eight bars, for instance. Here it is, transposed into F.

Bb	C	Ami	Bb
Bb D F	C E G	A C E	Bb D F
Bb	C	F	Bb
Bb D F	C E G	F A C	Bb D F

The song's almost always searching for that root chord to resolve to, which gives it a wonderful subtly unanchored quality like it's harmonically nervous despite not doing any obviously fancy things with harmony. The root chord in the chorus falls underneath the lyric (I'm waiting for the final moment you) "say the words that" (I can't say), sung in on a high note descending downwards. It's a nicely effective synergy between melody, harmony and lyrics, that moment. Were we all so thoughtful as that lot...

Look at the A minor though. It's the closest chord to the F in the whole key. One note is one semitone away. It's very, very close to the F. One reading of this is that the F has been substituted into the Ami since the two chords are so very similar.

Let's get the blues.

I got the blues

The twelve-bar blues is a genuine classic progression. Its bleached seventhless variant goes like this.

I	I	I	I
IV	IV	I	I
V	IV	I	V

It's all I, IV and V. Yawn.

A more interesting and traditional variant goes like this.

I	I	I	I
IV7	IV7	I	I
V7	IV7	I	V7

The twelve bar sticks to the root, subdominant and dominant chords (not chord groups, chords). It's the most unsubtle chord progression around these days but it's still as versatile as ever it was when you pop some lyrics over it, and its familiarity means you can comfortably experiment a lot more with melodies in it as opposed to an unfamiliar chord progression.

An original chord progression to stare at

Let's look at a progression where one of the notes in the centre stays the same, in this case good old C. These are the chords that came to mind when i thought about which chords had a C in them. I've got a minor triad, an inverted major, a sixth and a minor seventh.

	Ami	C/G	Ab6	Dmi7/A (Ami)	
low	A	G	Ab	A	A
mid	C	C	C	C	C
high-mid			Eb	D	
high	E	E	F	F	E

As you can see, the high note E effectively breaks into two separate notes before converging back on E again at the end of the loop. The low note moves around by whole tone and semitone before it gets back to A early in anticipation of the Ami at the recommencement of the loop. C is included in all the chords, tying them all together.

The low peripheral note moves around in steps of a semitone and a tone, a very common strategy.

The peripheral notes move around a centre note. That's the maths of it. How this rather odd chord progression makes you feel as a person is another matter entirely, i'd suspect.

This example is in the key of A minor, which you can tell because most of the chords use exclusively white keys. It admittedly leaps rather suddenly into another key when it gets to Ab6 (could be any number of keys, really) but comes back again in time for Dmi7/A.

Specific chord progressions

Here's some chord progressions which have been used in various different songs over the ages. Some of these have already been covered in the cadences section technically but they're worth covering once more in a different context. They're listed ordered by the chord roots then their tonality as given in the chord dictionary.

Now you might ask how loads of different songs can use the same few progressions over and over again without there being any legal battles involved. Well. It's because even though the harmony is the same, the lyrics and melody and arrangement are different. The lyrics and the melody are the copyrightable bits and as such the harmonic progressions don't really get a look-in.

I-IV-V. Fairly obvious - the three major chords from the diatonic scale in a row. Used on *Time of Your Life* by Green Day for their verses and doubtless loads of other bands in loads of other songs. Like that song *Downtown* in the chorus.

I-Vmi. Cosmic-sounding old progression this one.

I-VIm-IV-V. Best known as the chord progression from *Heart and Soul*, this chord progression ruled the doowop genre in the fifties through songs such as *Earth Angel*, *Why Do Fools Fall In Love?* and *Lollipop*. Yes not all of these tunes are doowop. So what.

Imi-bVII-bVI-V. The "hit the road jack" progression.

IIImi-V-I. Frank Zappa proclaimed that this progression and its variants epitomised "bad white-person music". Its variants would be things like **IIImi7-V7-Ima7** (same roots, different chords) and so on. Used a lot in jazz.

bIII-bVII-Imi. A technoey sort of progression, *Blue Monday*, anyone?

V-I, aka *perfect cadence*. Back to the root chord in a fairly strong way. Quite loopable.

V7-I. Back to the root chord in a somewhat blandly traditional way.

V7-I6. Back to a root chord in a way that really emphasises that added sixth.

IV-I, aka *plagal or 'Amen' cadence*. Back to the root chord in a gentle way.

IVmi-I. A grandiose progression. Easiest-to-find use: the 20th Century Fox jingle such as at the beginning of Star Wars.

bVII7-I. A weird little progression i haven't heard used anywhere.

VII-Imi. Gloomy and ominous progression used a lot in Philip Glass's *Koyaanisqatsi* soundtrack.

For an oversized version of this part, check out the progression index in appendix K. You'll be somewhat sorry you did because it's more information than is easily taken in in one shot.

Listen around you

You can find more inspiration than just New Order on paper by looking for things like guitar tabs on the web. In Google, type "(artist) (song) tabs".

Failing that, try working out the chords for some of your own favourite songs. It might take a while, especially if there's some suspended fourths in there, but being able to figure out what makes your favourite songs so good—from both the perspective of dry analysis and emotional appreciation—can help you along greatly in your own composing. If you're having trouble, try whistling the distinct notes you hear in the harmony and matching them on your own instrument of choice. Once you've got a couple of them, trial and error should help you get the rest.

As a composer you should listen to any sort of music you possibly can and absorb it—all of it contributes to your personal vault of musical manoeuvres in terms of melody, rhythm, lyric and harmony. Go outside your field of composition. I'm primarily an ambient composer but i listen to shoegaze, techno, classical, punk, avant garde, noise, house, jazz, goa, rock, golden oldies rock, rap, downbeat, you name it.

There's just **so much** to be learnt about harmony, there really is.

Melody

Until i knew about music theory, good melodies were hard. Really hard. I'm not a person with a grand innate sense of melody when it comes to composing, although i can whistle a tune and usually i can sing in harmony off the top of my head. I eschewed melodies for the longest time until i found out that it's easy enough to fake a serviceable melody from the harmonic elements of the song. Then i found out that the melody can actually conduct the harmonic part into interesting new places and began to appreciate that the melody and chords are interesting playmates.

Although melody is simpler than harmony with just the one note playing as opposed to a single chord, it's easier to learn about notes, then chords and harmony, and then melody afterwards as an extension of harmony.

Writing a melody

Principles of writing a harmonic melody

A harmonic melody is one which sticks pretty close to whatever harmonic structure is present in the song. A really basic example of a harmonic melody is one which uses only the notes of the chord playing at the time. At that level it's simple, but a little bit boring if you're only using triads. A slightly looser format is to adapt a palette of notes from both the key you're working in, the current chord and the whole tone principle discussed earlier: use the notes of the chord, work out what other notes can be played without clashing with the notes of the chord by being a semitone away, and then take out whatever notes aren't in the scale/key you're using.

Melodies can be thought of in terms of nodes and paths. A node note would ideally be one of the notes of the chord, and path notes are those which travel between the nodes. Path notes are transient in that they're only there to get from A to B and don't last long. They're less significant than the node notes which are by comparison more consonant with the harmony and are usually held for longer. Paths can also encircle nodes without moving to a new note. A path can progress by semitones, whole tones, whole and a half tones, or make even larger jumps depending on the desired effect.

Melody's the winding path through the harmony, as i see it. It skips on and off the notes of the harmony to accentuate them, occasionally stepping off the path altogether to jump between notes on the scale. It may not be this to everyone but if you've never written a melody before, this is a good framework to begin with until you're melodically capable enough to do without it.

An example harmonic melody using nodes and paths

Part of the major progression from Chronologie pt 4 by Jean-Michel Jarre will analyse nicely into a node-and-path melody for our purposes. (If you don't know this song, the album's been remastered and rereleased on CD so you should acquaint yourself with it at your local CD shop of choice as soon as you can. My bandmate Jeremy reckons we should play it during a DJ set one night to see whose head explodes.)

The key is C. I'm not just saying that for convenience like i usually do: this song really is in C.

Chord:	C	G	Dmi	F
Notes in chord:	C E G	G B D	D F A	F A C
Inverted:	G C E	G B D	A D F	A C F
Melody:	E: F E	D:	D E F: E D	C: D
Node:	E	D	F	C

Any note with : is held for a significantly long time.

In the first phrase, the functional melodic node is E. The melody anticipates the step down to D by first rising up to F, then hitting E again before coming down to the node note D in the second section and holding there. The third section sees a note-by-note rise from D up to the next node, F, and then a descending series of notes down to the fourth section's node, C.

The first and third sections have nodes which function as the thirds of their respective chords: E is the third of C, and F is the third of Dmi. By contrast, the second and fourth sections have nodes which function as fifths of their respective chords: D is the fifth of G, and C is the fifth of F.

Getting a long melody out and written need not be much harder than setting yourself some node notes determined by the harmony and connecting them with path notes. If that's not the most useful secret about writing melodies ever given away, i'd dearly like to see what is.

An example melody from pop music

Let's use the melody from the chorus of Bizarre Love Triangle for further analysis, setting it in the key of C for the sake of it being easy to read:

Chord:	F	G	Emi	F
Notes in chord:	F A C	G B D	E G B	F A C
Melody:	A B C D (E)	E D C B G	*G F E D (C)	C D A [G]

(*melody goes up an octave in this phrase)

Most of the notes in this melody are adjacent to one another, stepping up and down the scale a semitone and whole tone at a time. Don't underestimate this deceptively simple technique.

The notes in round brackets (E and C) are anticipations of the next chord in the progression, another well-used technique which keeps the song rolling along. In the case of the E, it combines with the G chord to suggest a sixth chord, harmonically enriching the proceedings. The C during the E minor is part of the F; with the melody passing over the notes G E and C in that same phrase, the melody spells out an absent C chord.

When melody drives harmony

To end up with more interesting chords, bend them around a melody a bit. As i said before, if you want a melody to fit some chords but the chords jar with the melody, change the chords so that the melody is to some extent inherent in the harmony. If you've got an F in your melody which you like in the context of the melody but that jars in the context of the harmony, change the C to a Csus4. If you've got an A in your melody which you want to make more significant, change the C underneath to a mellow C6.

Harmony and melody that dynamically react to one another in profound and interesting ways are usually good things, unless you're aiming to be uninteresting with your music in which case you only need to pick the one chord to play for an hour.

Melody as embellishment

Not all melodies are lead melodies. Some melodies just decorate the harmonies. You can arpeggiate a chord into a melody by playing the notes of the chord in sequence. Philip Glass is the crown king of arpeggio and if you've listened to the soundtrack of *Koyaanisqatsi* then you'll have heard thousands of arpeggiated chords already.

You can also put melodies over a chord to suggest different chord forms. Play a C chord, then play a melody that goes E D E D E D... over it. The melody suggests a Csus2 (or if you're reaching a G) without changing the chord. Even simple embellishing melodies like that can do wonders for a song.

Counterpoint, or What Took Me Weeks To Figure Out

Counterpoint, like Holst's Mars, is one of these things we've all heard but we haven't necessarily known what we're listening to. Bach was the King of Counterpoint in his time, and thus if you write counterpoint you'll probably end up sounding like him a bit. Except not as good.

Counterpoint involves layering two or more melodies one on top of the other in order to suggest harmony. There are a heap of rules governing which intervals you're meant to use; these were later built on by some bloke called Fux (ooer) after Bach's time into different "species" of counterpoint, which determines how many notes of the base melody or cantus firmus go with however many notes

of the other parts of the counterpoint. The suggestion of rules may turn some of you right off, but in all honesty breaking them unintelligently leads to pretty poxy results.

Suffice it to say that counterpoint could give electronic dance music a completely giddy spin if anyone decided to sit down and actually write a counterpoint that bopped along to the Amen break.

What follows is a very, very basic primer on counterpoint. If this piques your interest, go and find yourself a book and study up on musical notation because almost all of them will use that instead of the sort i use.

Melody on Melody

The base melody should have a distinct character of its own, and according to The Rules shouldn't go up or down for longer than three notes at a stretch or leap any more than an octave at a time. Just to keep things simple i'll provide a melody that uses the same note lengths all the way through.

This particular melody is sort of dramatic and minor key to make a change from all the other major key stuff i've been throwing at you in this book.

Just to be clear, D' is one octave above D, and D'' is two octaves above D, and D, (that's a D with a comma after it) is one octave below D.

A' G#' A' D' E' F' E' D' A# A A# G F A D

No, that's rubbish for our purposes right now. But notice how you've got sort of a progression of notes A, E, and A# that suggest the uppermost notes of the chords Dmi, A, and Gmi/D? And the last three notes of the melody are the notes of the Dmi chord itself. If you decide to play the G in that sequence in a chord it turns out sort of smoky.

Ahem. Back to it.

C' D' E' G A B A E G C' B G C'

That'll do. In that melody you can probably already hear the obvious chord progression leaping out and beating you over the head with its obviousness. But let's get another melody going on top of it.

Now the rules of counterpoint tend towards favouring certain intervals. Octaves and fifths aren't very interesting or useful because they don't do very much; fourths and sevenths are so-so; sixths and seconds are okay once in a while but thirds are generally the mainstay of the form. Even still, you can't use thirds all the time.

Let's go stupid with thirds and fourths/fifths to lay a boring and overly pleasant melody over this one.

C' D' E' G	A B A E	G C' B G	C'
E' F' G' C'	C' D' C' G	B' E' D' B	G

Well, it's okay. Not very lively or interesting though; the bottom melody moves more or less parallel to the top one and doesn't display a lot of dynamic character of its own, which is something that should also happen.

As is tradition for this paragraph of non sequitur weather reports, i would like to complain that it was warm today and that it made me feel irritated and sleepy.

And now for something that has a bit of its own character.

C' D' E' G	A B A E	G C' B G	C'
E G C' F'	E' D' C' D'	B E' F' D#'	E'

It's still a long way off from Bach but you can see a few sevenths and even the old diabolus in musica tritone (B-F) make an appearance. This one's got more motion than the counterpoint above it simply because its sounds more like two melodies moving gracefully over one another rather than two-note chords being played at speed. That's when you know you've got a good counterpoint, when you get characterful melodies that form harmonies before your very ears.

Fux (ooer) talked about five species of counterpoint as well, which were respectively: note for note (as above); two or three notes in the melody to one note in the cantus firmus; four or six notes in the melody to one note in the cantus firmus; one note to the counterpoint to one in the cantus firmus except that the counterpoint is offset slightly, forming a syncopated counterpoint; and a mixture of the preceding four styles.

Syncopation will be explained in the rhythm section. Syncopation is fun.

Have you heard it upside-down and backwards yet?

Counterpoint theory also goes into things like manipulating the cantus firmus to turn it upside-down (inversion) and/or play it backwards (retrograde), as well as diminution (halving the length of the notes) and augmentation (doubling the length of the notes). The example i've got here, which is from J S Bach's Art of the Fugue, has a cantus firmus that goes

D A F D C# D E F

The inversion of that goes

A D F A Bb A G F

It's more obvious if you look at it in staff notation that an inversion simply means using one of the notes, F in this case, like a central pivot and inverting all the other notes as intervals around it. Represented as distances from F, the cantus firmus becomes

-2 +2 0 -2 -3 -2 -1 0

and in order to invert it, we just change the plusses to minuses and vice versa. Multiply the whole row by -1.

+2 -2 0 +2 +3 +2 +1 0

D is two scale notes down from F; inverted, you go two notes up from F to get to A, and vice versa with A inverting to D. C# is an altered C, three scale notes down from F, so that inverts to Bb above F. The rest of the inversion should be self explanatory enough.

Retrograde just means playing the cantus firmus backwards. Going from this

D A F D C# D E F

to this

F E D C# D F A D

doesn't take too much brainpower. Unless you have a habit of losing your place.

Retrograde inversion is when you've got the cantus firmus melody upside-down and backwards at the same time.

Timbre melodies

This is where i appear to backpedal slightly after slagging off atonality. There was at least one positive outcome of abandoning diatonic harmony for chromatic harmony, and the one i've got in mind may be very useful to those of you who aren't actually that good at melodies but still want to write them.

Abstracting a fair bit, you could say a melody is a temporal progression of different tones. You go from one note to the next and that's fairly interesting. But what if instead of (or including!) different notes you used different playing manners, or different amounts of clarity on your instrument, or for a more modern twist different amounts of velocity or different settings of lowpass VCF cutoff/Q? That's still technically a progression of different tones, it's just that the tone is also being altered in another aspect aside from notes.

Anton Webern, to many the most inspirational of the atonal composers, called these progressions of different tones *klangfarbenmelodien*, and when literally translated this means 'sound colour melodies'. 'Sound colour' would appear to be a way for Germans to refer to a word that we English-speakers had the good fortune to steal from the French: timbre. Because it's been stolen from French, timbre is pronounced tamber and not timber. So a less stilted translation of *klangfarbenmelodien* would be timbre melodies.

Webern's own take on timbre melody makes listening to his music slightly more interesting, since it's the manner of playing the notes that's being focussed on for expressive purposes.

So how many ways can you play a note? You can play it quietly, loudly, muted, sustained, with vibrato (pitch wavering), with tremolo (volume wavering), harshly, gently.. and that's just older instruments. Think about all the ways you can affect an instrument these days and you'll begin to see what sort of chaos could ensue.

One of the songs i did in my band Wiggle had its own rather odd timbre melody: my sampler was dying and i was digitising something off my tape deck. The sampler was so utterly munted that it was picking up different bleeping tones when i switched between chromium, metal and normal tape modes. So i started switching between the different tape modes to play the different buttons like a musical instrument and later used the recording in a song that was one of the standouts on our debut CD in 1999.

The more atonal and harsh timbre melodies are sort of in a functional limbo between percussive and melodic aspects; rightly done they can bolster the rhythm of a song wonderfully.

Variation and reharmonisation

Listening to music is a more complicated affair than you might think.

The human brain loves picking up on patterns and systems and other ways to make sense of things, and music is replete with patterns and systems of all sorts. There's the key you're in, the rhythms you're using, melodies: music is the manipulation of all sorts of pattern-based information. The intro-verse-chorus-verse-chorus-bridge-verse-chorus-outro pattern of pop music is one well established pattern which people have been tweaking to their own ends for more than fifty years now. The pattern which results in the perception of a particular key has been established for centuries longer. If you hear chords from the key of C, you'll expect other key of C chords.

Now once these musical patterns are established, the patterns can be carefully bent or even broken to contradict and manipulate the expectations of the listener. Sometimes these contradictions can be pleasantly surprising and effective, and sometimes they're just intolerable and don't do well.

In the key of C major for instance, people these days will tend to tolerate chords from the key of C minor too, since flipping tonality has been standard practice in popular music for a long time. The following chord progression flips its tonality when it uses Eb and Bb, but doesn't sound exceptionally weird.

C	Eb	F	Bb	(C)
C E G	Eb G Bb	F A C	Bb D F	

Even breaking the patterns can lead to its own pattern. Check out this chord progression from the middle eight of my song *Sanguine*:

E	B	D	A	Cma7	G	B9sus4	B
E G# B	B D# F#	D F# A	A C# E	C E G B	G B D	B E F# A C#	B D# F#

The working key drops down from E major to D major to C major before coming back up to E major again. But there's a definite method to the way it's done: from E to its fifth B, then from D (two semitones down from E) to its fifth A, then from Cma7 (two semitones down from D) to its fifth G.. it's a descending pattern.

It's a Cma7 by the way because the song was written on guitar; i find Cma7 easier to play than C and it both sounds more interesting and sets up some of the notes in the following G chord quite well.

Now not all established patterns are bad and need changing every time you repeat them, and not all ways of breaking patterns will give you the effect you want. It's up to your own sensibility as to when breaking established patterns will work.

What follows in this chapter is a short tour of some techniques you can use to tweak harmonic progressions and melodies in your music to give your overall songs a bit of variation.

Some of this sort of thing was already covered in chapter 4 where i talked about putting carrier chords before other chords to anticipate and colour them. Carrier chords are an example of horizontal tweaking, since it happens in time. Changing the actual chord itself (let's say from a G to a G6) is an example of vertical tweaking, since the change happens 'on top of' and at the same time as the chord.

You can of course use these techniques to tweak a chord progression that you don't intend to change throughout the song as well. Or you could use a plain progression at the beginning of the song and then use more complicated versions with vertical and horizontal chord substitutions towards the end. Or the other way around even, starting with subtlety and complexity and then moving ultimately to simple chords with all their associated directness and power.

Techniques for harmony

For this section to work, we'll need to come up with a chord progression to play with. I'll volunteer a version of one of my own, called *Kwinkunx*:

F	Dmi	F	Dmi
F A C	D F A	F A C	D F A

Eb
Eb G Bb

Bb
Bb D F

Eb
Eb G Bb

Bb, C
Bb D F, C E G

Vague alteration

Let's start with a variation that emphasises the F and Eb chords. This is a pretty extreme vertical variation on the original chord sequence, but could well be used as a break between repetitions of this progression.

F
F A C
Eb
Eb G Bb

Dmi/F
F A D
Cmi/Eb
Eb G C

F
F A C
Eb
Eb G Bb

Dmi/F
F A D
C/E
E G C

There's a pattern in the distance between these alternations: D is the sixth note of F major, and C is the sixth note of E major. The interval between the root notes of these two pairs of alternating chords is the same. The pattern is bent slightly when after the second instance of Eb, C is back to being a major chord, which is what you'd expect if you were in the key of F. (Eb is permitted into the progression because key tonality flipping from major to minor to get new chords is permitted.)

Now simple alternations between two chords like these are fairly static sorts of patterns and while not overwhelmingly interesting can certainly have their uses, such as settling a song down a bit before taking it somewhere interesting again. The C at the end of this chord progression could very well be on its way somewhere interesting.

Think about the similarities between this and the original progression: chord root notes; the interval relationships between those chord root notes; which chords appear where in common; and so on. These correspondences paint a relationship between the original progression and this slightly more static variant.

Matching chord forms

The version of *Kwinkunx* on CD has a chord progression like this.

F
F A C
Ebsus2
Eb F Bb

Dmi
D F A
Bbsus2
Bb C F

F
F A C
Ebsus2
Eb F Bb

Dmi
D F A
Bb, C
Bb D F, C E G

Note smearing is the name I give to when the form of one chord affects the chord coming after it to the extent where novel notes are passed along, turning it into a cross between a passing chord and a landing chord. *Kwinkunx* loses its subtle harmonic character when the suspended chords are played as major triads.

Characteristics from Dmi bleed over an F to Eb to turn Eb-G-Bb into Ebsus2—Eb-F-Bb, giving the Eb chord characteristics of both the F and Dmi chords before it and changing its bold major tonality to that of the more furtive suspended second. This unstable quality makes both the Ebsus2 and the Bbsus2 more inclined towards carrying the song along to a resolution at F. One might expect to hear a major triad, but one doesn't, and the suspended chord carries along to an unsuspended major triad. That in itself is more musically interesting to hear than only major triads.

For the sake of the exercise, there's nothing to stop us from playing Ebsus2 for a beat or two then playing a normal Eb, and then playing up to an Ebsus4 if we were feeling particularly decorative and fidgety.

Progressions with harmonic melody

Say we've got a chord progression that alternates between F and Dmi in one bit, and we want to give it a rising feeling. (Maybe it's the end of the song and we want a final climactic moment.) We can actually respell the chords so that they carry higher and higher.

You can vertically change the spelling of the chords in the progression in many cases to get something more interesting that doesn't contradict your original intentions. Suspended fourths, sevenths, added seconds, added ninths—use your intuition and experiment to see what makes the chord progression sound more interesting. It can be interesting when a chord seems to anticipate one chord in its

alteration, and what you might call harmony melodies occur as the different notes in the chords seem to correspond and form a melodic pattern of sorts.

So here's a rising version

F6	Dmi6/F	Fma7	Dmi6add9/F	...
F A C D	F A B D	F A C E	F A B D E	

The D on F6 anticipates the D at the top of Dmi6/F, then the B and D in that chord steps up melodically to the C and E in the next chord; the C in the Fma7 is in turn replaced by the B and D in the final chord, echoing from the second chord in the progression. You can hear this one building to a pattern, going up and up, and you'd expect the next chord to be something like a F6/9 (F A C D G).

To an extent you can substitute for chords, by using other chords which have notes in common with them. Again, let's use the progression above.

A	Bmi	E7
A C E	B D F#	E G# B D

Now let's try to anticipate the Bmi (horizontal substitution) with something by adding a carrier chord just before it that matches some of its notes and comes close to others.

Gma7 has all the notes in Bmi but doesn't anticipate it very dynamically. Let's sod that off then. G7 is slightly more dynamic, having two of its notes. Flatten the fifth and G7b5 sounds even better anticipating Bmi, having less notes in common with the chord but having most of its notes come close. See how we're tweaking here? It's common to start with something vanilla-sounding and shift a few notes around to produce something a bit more interesting.

D has two of Bmi's notes (A) and the A in common with the A chord before it. That's slightly more interesting. F#sus4 has two notes in common with Bmi (F# and B) and works alright too. F# without suspension works quite well, mainly because of the harmonic relationship between B as a root and F# as its fifth; it's a slight but useful key flip.

Tritone substitution

Tritone substitution, also known as flat five substitution, is the sort found in music theory textbooks. The rule is that you're allowed to substitute a *functioning* dominant seventh (i.e. the dominant seventh of whichever key you're working in, as opposed to a secondary dominant seventh which is only dominant relative to the chord you're putting it before) with a seventh rooted exactly a tritone away.

The dominant seventh of.. oooh.. what's one we haven't used much.. let's use A. A's dominant seventh is E7. The tritone of E, six semitones or a flattened fifth away, is Bb.

So here's a short chord progression.

A	Bmi	E7
A C E	B D F#	E G# B D

And here's the same progression with a vertical flat five substitution

A	Bmi	Bb7
A C E	B D F#	Bb D F Ab

If you don't see it yet, look at the notes in E7 and Bb7 and think tritone. Triiiitoooooone.

Given up? Fair enough. This rule works because of the interval structure of the seventh. Compare the two chords, and allow me to make it slightly more obvious.

E7	A#7
E G# B D	A# D F G#

HEY! THEY GOT THE SAME TWO NOTES! AND THOSE TWO NOTES IS A TRITONE APART FROM EACH OTHER!

That's the reason the seventh has the character it has, because it's got a tritone interval in it. And those two different sevenths can sub for one another because the tritone interval in the both of them contains the same two notes. It's the same for any two seventh chords whose root notes are a tritone apart from one another.

If it's just the tritone that matters, wouldn't that mean you can diminish or augment the fifth of the tritone substitution you might ask?

Yep. A diminished fifth tritone substitute sounds fairly good actually. The seventh diminished fifth is two tritone intervals itself, so it floats beautifully to the next chord.

A
A C E

Bmi
B D F#

Bb7b5
Bb D E Ab

Static motion substitution

This is an easy-peasy one. You probably already do this but it's worth mentioning all the same.

Let's say you've got a F chord that you've got to hold for eight beats. Eight beats on the same chord is a bit boring. So instead of just the F, what about this sequence of chords here with two beats for each chord?

F
F A C

F6
F A C D

F7
F A C D#

F6
F A C D

(F)

Here the basic F triad is preserved throughout each chord, and the top note plays a little melody over the top of it. It's possible to just keep the F and C going without losing one's bearings too much, as long as we're only using suspended seconds and fourths which don't contradict the major third.

F
F A C

Fsus4
F Bb C

Fsus2
F G C

Fsus4
F Bb C

(F)

Hey, let's mix these two things up!

F
F A C

F6
F A C D

F7sus4
F A C D#

F6sus2
F A C D

(F)

This sort of progression is called a static progression, because it doesn't really go anywhere even though the chords are changing. They're not changing enough to be all that dynamic; the root note is the same, the fifth interval at the very least is the same. What happens when we start mucking around with the fifth interval? Let's find out.

F
F A C

F6
F A C D

F7#5
F A C# D#

F6sus2
F G C D

(F)

That loses some of its static quality and feels like it's drifting off somewhere. Even though the F and A major third interval is there almost all the way through, it's not enough to hold things in place. The strongest interval relationship in any chord is always the fifth: mess around with that and you're definitely going somewhere.

So when you're holding a chord a little bit too long in a chord progression, try swapping it for another chord with the same root note that has a slightly different shape.

Techniques for melody

Direct major/minor melody transposition

This isn't a particularly hard trick, just a slightly fiddly one. Here's a melody. 'G stands for the G of the octave below the melody, given that octaves start and stop at C.

C	'G	C	E	F	D	F	D
'B	'G	'B	D	C	'G	C	

The underlying chord progression is C F G C if you can't tell.

Translated to abstract notation, we get the following.

i	'v	i	iii	iv	ii	iv	ii
'vii	'v	'vii	ii	i	'v	i	

I want to transpose this melody to the scale of A minor, C major's relative minor, and create a variation on this major scale melody.

The difference between the major and natural minor scales is that the third, sixth and seventh notes are all flattened. The above melody transposed to a minor scale yields this.

i	'v	i	biii	iv	ii	iv	ii
'bvii	'v	'bvii	ii	i	'v	i	
'A	'E	'A	'C	D	'B	D	'B
'G	'E	'G	'B	'A	'E	'A	

It can sound better. Moments like these are what alternate minor scales are for.

In the harmonic minor, which we're going to use instead of the natural minor, only the third and sixth notes are flattened relative to the major scale. The seventh is left only a semitone away from the root note which gives the scale a bit more tension.

i	'v	i	biii	iv	ii	iv	ii
'vii	'v	'vii	ii	i	'v	i	
'A	'E	'A	'C	D	'B	D	'B
'G#	'E	'G#	'B	'A	'E	'A	

That sounds much better, doesn't it? The G# provides more interest than that limp old G, playing off the semitone distance away from the functioning key note A.

Now play the original melody, then the harmonic minor version. Tidy!

Rhythm: beat and groove

Rhythm is expressed in the beat and the groove. The thing about rhythm i want to get across is that it's not just the drums and other tone-free sounds, even though the beat is the most obviously rhythmic bit because it's got nothing to do bar rhythmic and some textural duties.

Drum theory

Let's start from the perspective of a drumkit and work our way sideways into oddness from there. I'd like to add a special disclaimer for all drummers who think they know better than i do about drumming: you indubitably do. Indubitably.

Now while all those drummers are off checking their dictionaries for the word *indubitably*, i can carry on in peace.

Modern drummers have two arms and two legs. (The head doesn't tend to do much except make drumming faces; these serve no direct musical purpose but look quite funny.) When i've sat at a kit before, it's worked like this: the right foot goes on the kick pedal, the left foot goes on the hi-hat cymbal pedal to open and close the cymbals, the left drumstick goes on the snare drum, and the right arm crosses over to let the right hand drumstick take care of the hi-hat cymbals.

Introducing the drum parts.

The kick drum doesn't have that much of an expression range. You push down the pedal. It goes doof. You push it down harder and it goes DHOOF.

The snare has more range of expression. On the bottom of the snare are springy things which rattle when you whack it; these can be both engaged and disengaged depending on whether you want the snare drum to snap or not. Generally we opt for the snapping, because it counterbalances the DHOOF of the kick drum. You can hit the snare drum just a little bit for a modest little poppy noise, which is called a ghost hit, or you can give it a fair whack and get a full hit out of it.

The hi-hat cymbals are two cymbals on a pedal-operated gizmo. With the pedal left undepressed, the cymbals touch one another and offer only a short sound one may spell as TIT if one is so inclined. When the pedal's pushed all the way down, the cymbals aren't touching at all and the cymbals are free to vibrate as long as they like when hit, or at least as long as the pedal is held down by the foot of the drummer. One may deign to represent this noise as TSST. This pedal controller allows a precise amount of control about when the hi-hat cymbals start and stop making noise, and you can also vary the velocity at which you belt the cymbals with the drumstick to get quiet and loud sounds. Even manipulating the pedal correctly makes the hats sound a clompy sort of noise.

Other cymbals include the ride, the crash and the splash. The ride cymbal is by my reckoning the sexiest of the three. More on cymbals later.

Other actual drums include the tom-toms. These are semi-tuned drums which make noises one might transcribe as dhoong when hit.

Now a drummer with the typical number of arms and legs is limited to only a couple of these instruments at once. Kick, snare and hi-hat cymbals. Kick, cymbal and hats. Kick, snare and toms. Kick, snare and ride cymbal. Kick, ride cymbal and toms. Kick, toms and more toms.

If this knowledge helps you untangle excessively complicated drum programming - only use one kind of hi-hat cymbal at once, use different velocities of snare and pepper your beats carefully with ghost hits to give them more groove, don't use a ride cymbal and hi-hat cymbal at the same time - then good.

If you can sort a drumkit out in your head, you're most of the way to solving any problems you might have with programming rhythms.

Actual rhythm

Let's count to four. One. Two. Three. Four. Do it with a rhythm, damnit. One. Two. Three. Four. March up and down on the spot if you have to. Left. Two. Three. Four. Left. Two. Three. Four. Why do we keep getting to four and stopping?

Time signatures

It helps with rhythm to know a bit about conventional music notation. Just a bit. It's useful, this bit, and not hard to remember since it's fairly elementary maths.

A bar, it's been decided, is sort of a standard length in musical notation. You might have seen something called a time signature in your travels. It's two numbers, one over the other, and it looks like a fraction. 4/4. 3/4. 2/4. 6/8. The top number describes however many units to a bar, and the bottom number describes the length of the units themselves in terms of fractions.

What a time signature identifies as a quarter note (as in 4/4, 3/4 and 2/4) is easiest for us to think of as a beat. Take your common or garden doof doof house track. Each doof marks the passing of a quarter note. They call it four on the floor because it's four quarter notes for each bar. At least that's what i've convinced myself. It's a quarter note because if you add four of them together, you get a full bar.

You can get eighth notes as well, which happen twice as often as the quarter notes as their name suggests. Hi-hats are often played on the eights, for instance.

You can get sixteenth notes, which happen four times in every beat. Hihats on sixteenth notes sound somewhat discoey and usually require two drumsticks to play, with one drumstick coming down to play the snare every other quarter note.

You can get thirtysecond notes, but i never use those. You can get sixtyfourth notes, but i really never use those.

Three fours.

OK, start tapping your feet fairly quick and count along here. One. Two. Three. Four. Five. One. Two. Three. Four. Five. Un. Deux. Trois. Quatre. Cinq. Einn. Tveir. Thrir. Fjorir. Fimm. Can you hear the music for *Mission Impossible* in your head yet? Imagine it as you're counting:

1	.	2	.	3	.	4	.	5	.	(1)
derm				derm		derm		derm		

That's a 5/4 rhythm. There's five beats to the bar.

Who knows Pink Floyd? Don't be shy, lots of you have heard *Dark Side of the Moon* i would hope. Check out the track *Money*; it's in 7/4 time. Count along if you like.

1	2	3	4	5	6	7
Mo-ney						get a-
1	2	3	4	5	6	7
-way						get a
1	2	3	4	5	6	7
good	job	with	good	pay'nd	you're	o-
1	2	3	4	5	6	7
-o-	-o-	-kay..				

Most gabber songs are in 2/4 time. Or maybe 1/4 time.

1	.	2	.	1	.	2	.
OUN-	-TSZ!	OUN-	-TSZ!	OUN-	-TSZ!	OUN-	-TSZ!

Most songs that people concern themselves with are in 4/4 time.

Bass rhythm

The phenomenon of rhythm permeates everything, not just the percussion section. The element that carries rhythm the most aside from any percussion, for my money, is the bassline.

By reggae musicians (probably Scratch, since he does do a lot of talking) i've heard it said that the bassline is the heartbeat of the song and the skank is the head. Psychoacoustically, the bassline is responsible for a lot of the presence and impact of the song. It underpins the harmony and melody, often in an unassuming sort of way.

Chord root bassline

To make a chord root bassline, you play the root note of whatever chord is playing at the time in whatever rhythm you like. If you're that stuck for a rhythm, just play the bass note on the eights, two notes per beat. It's not fancy and people might point at you and laugh for doing it, but in the absence of an idea for a real bassline it'll certainly suffice.

If the rhythm you're using for your bass isn't working, try playing the bassline in time with the kick drum. In a pinch, sometimes with some tweaking, that works out.

Melodic bassline

If you want to go a bit further, you can apply the same melodic rules to basslines as i mentioned in the melodies chapter: use your chord root notes as target points, and travel to each point by going up and down scales skipping whichever notes don't suit. It's important not to make basslines too interesting in an already busy song, otherwise you run the risk of writing modern jazz.

Walking basslines

They sound cool but i fear them from a composer's point of view. Maybe another time.

Lyrics

Language is the most low-tech form of telepathy yet devised. The raw emotions evoked by the melodies, rhythms and harmonies are literally given a voice by lyrics and only now is where you've got an actual song.

How? And why?

Why put lyrics in a song? Because sometimes you feel like being more specific and get sick of writing liner notes explaining what all your instrumental tracks are about. I don't know.

To be honest, i was horrible at writing lyrics for the longest time. This suited me perfectly because my singing voice was also highly suspect. These are things i've worked on and now i'm almost game to turn the reverb on my vocal tracks down a few dB and try to set some stories and ideas to music.

There are many many good books on songwriting out there and i haven't bought any of them. Not because i know everything there is to know, mind you, but because i wanted to attack my lack of knowledge slightly more obliquely. Also, the books i've flicked through in bookstores gave me a feeling like this was a particular area of musicianship i should muddle my way through at my own pace. Make of that what you like.

A book i did buy was *An Ode Less Travelled* by Stephen Fry. In it, Mr Fry instructs one in the ways of poetry and goes into things like meter and rhyme. It's a painless way to introduce yourself to the devices you'll use to make your lyrics connect, and is written in such a way that if you do decide that this is all just a bit of fun and not something you'll ever choose to do professionally, he doesn't make you feel bad. Much of the section to come on rapping is inspired strongly (though not directly lifted) by that book.

In pop music, nine times out of ten there will be a chorus that drives home the central theme of the song, and all the catchiness and parrotability will be focussed here. Verses take off from the chorus and usually return right back to it. It's the formula, and frankly it's a nice easy formula to follow.

Convention says that pop lyrics should rhyme and be in time with the music. I've never been one to follow convention religiously, i'm just mentioning this out of courtesy to tradition more than anything. Actually i'm not sure if opera rhymed very much, and i have a vague feeling the Ode to Joy rhymes. (It's all part of the same musical continuum innit?)

Now lyrics ought to be about something, though you can sing random fluff the way Brian Eno used to if you like. The chorus is where the theme of the song is brought to a head, and the verses are where the story is told or the themes are explored in different detail. Even MC Hawking knew this when he penned Entropy: he goes into the second law of Thermodynamics in the verses and keeps the chorus to a simple "You down with entro-py?" call and return.

The MC Hawking song does exist, by the way, and it's both hilariously funny and wonderfully put together.

If you're not into writing verses and choruses for whatever reason, you're not alone by any stretch of the imagination, but you should probably still write lyrics about something. It's easy enough to do a song with sung verses but without lyrics in the chorus, hypothetically, as long as your chorus still has a lot of character. Bo Diddley did it with his eponymous track Bo Diddley, singing the verses and introducing a higher guitar lick to let you know the chorus is upon you. Then there's Led Zeppelin's Black Dog, which drops the accompaniment altogether for the sung parts and starts it up again when Robert Plant's done his wailing. It just lets people know things are going somewhere.

Music is always something of a dance where sometimes you're stationary, sometimes you're moving, sometimes you're going in a circle, but the next chapter covers all that kind of thing.

If you want to know how good lyrics feel, listen to music that moves you. Take notes. Brainstorm.

And remember, they're lyrics, not poetry. Poetry is usually unaccompanied. Some lyrics do look absolutely rubbish when divorced from their musical context, and some poetry sounds horrible put to

song.

What to sing about

So what's on your mind? Sex? Relationships? Politics? Astrophysics? It can probably be turned into a song if you're willing to commit your thoughts and feelings to words.

Lyrics are generally at their most vivid drawn from real life, where all the humour, anguish, and other stuff has been played out already. Those sorts of lyrics are more a case of documenting what happened, changing a couple of names if you think the people involved would object to being put into a song, and telling the story of what happened.

Maybe it's not a story you want to tell but a feeling you want to share and evoke: if you've been there, it'll certainly help. If you're terrified of being kidnapped by aliens and you have amazing paranoid fantasies, spend a verse on them each and make the chorus **THEY'RE COMING!!**, screamed as terrified as you can make it.

Any human situation or feeling can be turned into a lyric, honest. You just have to get a feeling for what to describe and sing about. For that, it's back to other people's music. And probably lyrical poetry wouldn't hurt either. You've still got some Shakespeare poems lying around from high school, right?

And then all the killer lyrics in the world won't matter a whit if your delivery is either inappropriate or flat.

Brian Eno's way of writing lyrics

I heard Brian Eno talk about this in an interview posted on archive.org

Brian has a series of systems for tricking himself into writing lyrics. To start writing lyrics is hard enough, but to start writing lyrics is downright difficult. One's mind is mediated between the overbearing critic and the playful child, in more or less his own words. Brian's procedure for lyric writing is designed to short circuit the critic by not writing actual lyrics at all to start with.

Brian starts shouting along to a backing track and getting what he calls a syllable rhythm, which means he nuts out a rhythm that suits him and works for the song. After that, he refines things down to sounds with perhaps the odd word, keeping the proceedings fairly meaningless. Then he actually figures out which words fit best to those fragments. Then he sorts out sentences, and finally he refines a meaning into the song at the end of it all.

He's a keen one, that Brian. He produced U2 and named/pioneered ambient music, you know. Then again, he's also very smart and may be able to make this method work simply because his huge brain can fill in those gaps really well. Try it anyway one day if you're stuck for an idea.

How to lyricise

Now that you've got some lyrics, what about incorporating them into a song? Well, you can just speak them over the top of the music if you really want to, but there are other avenues.

Singing not everyone can do well. Johnny Rotten taught us nothing if not that what constitutes singing can be pretty much anything you feel like hollering into a microphone. Wendy Carlos taught us that all you have to do is move your mouth at a mic and a synth can take care of the tune for you. If you've got a vocoder and a good carrier wave, your only task is speaking in time. This is probably more embarrassing than singing but even tone-deaf people can do it.

If you decide to have singing in your song, you'll need a melody to sing. That came up a couple of chapters ago. Singing's quite good for coming up with melodies as long as you're relatively intuitive when it comes to what notes work over what chords. You can sing a two part melody if you feel like coming up with that much melody. I've been known to improvise five-part harmonies myself but my range of pitch is rather broad.

Singing is acting: try different voices; imitate other singers; gesture wildly as you pour your heart out through these fine fine lyrics you've got.

And if you really don't want to sing, or you can't hold a tune, then take a more recently-instigated road and rap.

Rapping

Allow me to be clear here and admit out that i'm not a professional MC or lyricist. I don't even like a lot of rap music because i don't buy into the image of it. I do however utterly love the **form** of rap, being as i am a cultural child of late eighties and early nineties electronic music and thus a person musically tuned in to rhythms equally as much as harmony. For this reason, i'm not going to get into any discussions specifically about race, class, violent impulses or sexual appetite here, because none of that is relevant to a discussion of form. It's relevant to a discussion of individual rap songs, perhaps, but not so much to the craft and form of rapping.

That said, the form of rap typically comes with a certain attitude, and at this stage in its lifespan this attitude is well into the realm of self-parody. You don't have to follow the prevailing bulltwang of the times and pretend to be a hardcore ghetto boyeeee when you're a white middle class tweed from Australia who'd probably be completely culture-shocked if he ever got anywhere near the Bronx. All you need to do to dissuade yourself that all rappers are foul-mouthed, self-aggrandising, violent and horny is to hunt down De La Soul's first album, or even some old Sugarhill Gang or Grandmaster Flash and the Furious Five. Or the Beastie Boys, who were white rappers long before Eminem took the stage, thank you clever record company marketroids the likes of which have also convinced the world the Apple I somehow beat the Commodore PET to the accolade of World's First Personal Computer.

Rapping allows a higher density of words than singing, since the focus isn't on harmony or melody of any sort but simply rhythmic speech. Opinion pieces and minor essays on subjects of import make good material for rapping; it's a cliché, but write what you know. And if your particular dialect of English has its own character and slang which is more meaningful to you than what they say in some New York borough, use that instead. *Represent*, as the slogan goes.

Actual songs can teach you a lot more than a book can so go and find some tunes you like (my preference is for old school rap like Sugarhill Gang though lately i've been looking up to DJ Format's good mate Abdominal) and absorb them. Listen to the delivery, the lyrics, the accompaniment too.

Rapnotation

I've invented my own notation for writing raps which my MC friend liked, so on such meritorious approval i present it here to you in this section. The notation supposes a lot of things which you're free to resuppose or unsuppose once you understand where i'm coming from.

Let's proceed from the idea that the most you'll generally divide a beat up when rapping is into four parts, and that each syllable goes for one of those parts. I'm going to call those parts "ticks" as a nod to my tracker scene mates instead of misusing words like "feet" or "morae".

The first thing to note is that **a syllable doesn't always correspond exactly to a tick**, but it does usually.

Say the following sentence out loud: *all i wanna do is eat a sandwich*. It might come out similar to the way i say it. My speech has a certain metre when saying this sentence which, simplified and set to beats, could be transcribed like this:

1	x	2	x	3	x	4	x	(1)
<i>all i</i>	<i>wanna</i>	<i>do is</i>	<i>eat a</i>	<i>san:-</i>	<i>-dwi.ch:</i>	<i>//</i>	<i>//</i>	<i>//</i>

The beat accents are marked above the words. The word *all* coincides with the first beat, the word *sandwich* starts at the same time as the third beat, and the word *wanna* occurs midway between beats 1 and 2 under an x which marks the off-beat. That much you can probably work out for yourself.

I've borrowed a couple of convenient notations from linguistics as well. (I've got a degree in linguistics and it's rarely useful.)

If a word gets broken up across beats, dashes indicate that the other part of the word lies in whatever direction the dash lies in.

I put a colon after any syllable to show it takes up an extra syllable than what it appears to. You'll see that the second half of the word *sandwich* doesn't start until the off-beat; that's because the syllable *san-* is held for two ticks in my particular dialect of English instead of one. The amount of time it takes me to say "sand" is roughly equal to the amount of time it takes me to say "wanna" or "all i". Given that i generally group the ticks into pairs, if the second syllable is lengthened into the next pair i mark it long, then put -: in the next tick-space to indicate it's following on from the last pair. (Examples follow in the rhythm section.)

If syllables are spoken in double-time, i pop brackets around them.

If a syllable gets broken into two, i use a dot to indicate the break point. You'll see that sandwich takes up four ticks: *san-* lasts two ticks; *-dwi-* lasts one tick and *-ch* lasts one tick as well. But why break up the word into three bits?

Even though conventional wisdom would dictate that *sandwich* is a word of two syllables, trying to rap *sandwich counter* in the space of one beat is a mouthful. (You might find yourself pronouncing *sandwich* more like *samwich* so as not to bruise your tongue and lips in the attempt.) What's important in rapping, generally speaking, is getting the flow right. If that means leaving a little bit of extra space around clusters of consonants like "ch", "j", "scr" and "mgrkfc" then that's what must be done.

Rests are marked with one slash / per syllable.

Phonetic devices

Phonetic devices are ways of arranging words by their sounds to form pleasing structures. By the way, do you know what vowels and consonants are? If yes, good. If not, you'll probably grok it soon enough. Just say the examples out loud.

You all know what **rhyming** is: it's when the ends of two words sound similar enough to draw an obvious correspondence. Bright white light. Hello mellow yellow. Dead red head. Mean green sheen. Loop soup. Sought, caught and brought. You can buy rhyming dictionaries nowadays which will save you the trouble of having to think of rhymes.

*I always hit the tape with the rougher **styles**
You heard the psychedelic and you came for **miles**
(Bug Powder Dust, by Bomb the Bass)*

Leaving aside full rhymes, there's all sorts of partial rhyme as well. The correspondences between partial rhymes are still striking enough to make patterns and often not having to be so exact means you have more words to choose from.

For instance, **assonance** is where the vowels match, but the consonants are different: examples include "spilt milk" (not just *i* but *-il-* in that one), "funky drummer" and "hard target". Rap's favourite word "motherfucker" has internal assonance and a good trochaic groove to boot, which may be why it's such a handy word to reach for. (My own dialect's semantic and functional equivalent of "motherfucker" is not quite as aesthetically pleasing, being as it begins with a *c* and rhymes with "blunt".)

*Rats in the front room, roaches in the **back**
Junkies in the alley with a baseball **bat**
(from *The Message* by Grandmaster Flash and the Furious 5 feat. Melle Mel)*

As a complete tangent, it occurs to me as a linguist type that assonance is made even stronger when the consonants after the matching vowel correspond by point of articulation - that is, how/where the consonant is formed in the mouth. For instance, "sleep" and "dream" both have their vowel followed by consonants made with the lips; this means that when the next letter is being formed by closing the lips, the vowel is acoustically shifting to the same position for each word. (It will amuse some to know that such lip-formed consonants are called *bilabial* consonants.) Here's an example:

*Send ya up the river like you're lookin for **Kurtz**
I got the mugwump jism up in every **verse***

(*Bug Powder Dust*, by Bomb the Bass)

Here are the consonants of English grouped by their points of articulation. You can check these for yourself if you like by feeling where your tongue and lips are when you make these sounds yourself. Accuracy may vary.

articulation point	sounds (NOT letters)
bilabial	b, p, m
labiodental	v, f (ph)
dental	both "th" sounds
alveolar	t, d, s (ci/ce), r, n, tch, j, l (more uppity dialects)
post-alveolar	sh, zh (like the sh-y z sound in seizure)
velar	k (c, ck), g, ng, l (less uppity dialects)
glottal	h

I left y and w out deliberately because they don't tend to come between vowels and consonants without becoming part of the vowels themselves.

Consonance is where particular consonant sounds are repeated to form patterns, such as amid a vivacious variety of available vowels. Entire words can match their consonant sounds but change to a different vowel, such as in slant rhymes like "feel full", "dead dad", "killed cold", etc. One form of consonance is **alliteration**, also known as starting words with the same sounds. The old tongue-twister "Peter Piper picked a peck of pickled peppers" is an extreme example of alliteration that older people might know. "She sells sea shells by the sea shore" isn't strict one-sound alliteration since it varies back and forth between s- and sh-, but that sort of variety is still worthwhile.

So now you know three main ways in which the sounds of words can correspond: they can rhyme completely, they can match their vowels (assonance), and they match consonants (consonance).

You're not limited to rhyming just the ends of lines either, but that's starting to get towards mixing up rhythm and rhyme which is part of the next section.

Rhythmic devices

When starting out, try to keep your language loose and informal to start with; the way you talk to your friends is a distinctly more comfortable fit than how you might talk to a teacher, a customer or manager. Even in everyday conversation, pay close attention to the places where the stresses in your speech fall.

The rhythm of English is dictated partly by the fact that when speaking, there are definite stresses; that is to say that not every spoken word is given the same weight. I've gone through the paragraph above and underlined the syllables which I'd consider stressed. Some of them are inside words, some of them are entire words. Getting a feel for this rhythm is important, because if you do misplace the stress of what you say, it sounds different to how it normally would, and that could potentially sound wrong to the listener. (As jazz musicians know, there's a world of difference between doing something wrong out of ignorance, and doing it "wrong" because you know how to break the rules.)

Misplacing an accent is called wrenching. Here's one I just made up:

There is no speech so very bent
as when one drops a wrenched accent.

"Accent" is stressed on its first syllable, yet in that couplet the stress in "accent" falls on the second syllable. Try to avoid it unless published artists do it in which case there's a precedent and you're free to copy them as you like.

We "know" that there's four ticks to a beat. Here's some ways of breaking up the beats.

1	x	2	x	3
pitter	patter	pitter	patter	pitter
vita-	-min:	vita-	-min:	vita-
vita-	-min vi-	-tamin	vita-	-min vi-
pit(terka)	pat(terka)	pit(terka)	pat(terka)	pit(terka)

You may presume you need to have a word to fill up each beat, but that's not necessarily the case:

1	x	2	x	3
pitter	/ pat-	-ter /	pitter	pitter
/ pit-	-ter /	pat- /	-ter:	/ pit-

Feel it get a bit more complicated when you start to leave gaps? This is where your lyrics can become a lot more dynamic than if you just utter a steady stream.

x	1	x	2	x	3	x	4
/ i	/ syn-	/ -co-	pate:	when i	/ say	/ it	late

(Rappers have something they call syncopation but i'm not sure if it's syncopation as i understand it or whether it's a word they've redefined slightly for their own purposes. I'll get back to you.)

Rhythm and rhyme work in concert. Through metre you can establish patterns of stress which you can then manipulate further by introducing full or partial rhymes. Let's say for instance i've got a rhythmic pattern which goes like this (syllables indicated u for unstressed, S for stressed and / as usual for a rest):

4	x	1	x	2	x	3	x	4	x
/ [u	S u	S u	u S]	/ [u	S u	S u	u S]	/ [u	S u ...]

Notice it leaves the 2 and 4 beats bare, yet anticipates them both a tick beforehand by placing a stressed tick there. The stress pattern fits the following sentences:

If i'm alone in the world
 I'll have a big one with fries
 You're sounding funny tonight
 A diff'rent packet of cheese
 An Elvis Presley bidet
 He munches bacon baguettes
 I'm climbing up to the top

Yes, i know a lot of those are food-related but i'm on a diet and pretty much consistently hungry.

Let's take the last example: *i'm climbing up to the top*. Vowel-wise, the stressed syllables are "eye" (or "ah" if you like), "uh" and a short "o".

Matching the last syllable is a given, and you can match either the first or second stressed syllable or both. Doing some brainstorming you can come up with "drop", "flop", "crop", "hop" and "stop" to rhyme with top. "Drop" in particular is a good one because of its meaning association with climbing, so that could be worth keeping. So the second line will probably involve falling. Here's some brainstorming, not particularly edited so you have no illusions about having to refine the raw inspiration.

I'm climbing up to the top..

<i>..i really don't want to drop</i>	(sensible but only one rhyme so not too interesting)
<i>..and trying never to drop</i>	(two rhymes but sounds awkward)
<i>..i'm trying not: to drop</i>	(two rhymes again, nice variation on the original rhythm)
<i>..not falling down if i drop</i>	(two associations, one full rhyme, double alliteration)
<i>..then diving down when i drop</i>	"up" vs "down" association on the second stress one partial rhyme and one full rhyme three words alliterating on "d", a very rhythmic sound maybe a bit nonsensical, why climb and then dive?

The good part is being able to say "i'm climbing up to the top, then diving down when i drop" and hearing the repeated rhythm, alliteration and rhyme without needing the beat. It's there, perhaps not perfectly refined but still present, just by virtue of the words you've chosen.

Patterns need not even divide neatly into beats. Here's another one from *Bug Powder Dust*, possibly misremembered: *I keep rhymes in line so fine sublime so when you search you find something like a goldmine*. Analysis looks a bit like this:

1	x	2	x
/ i	keep /	rhymes:	in line:
-: so	fine:	sublime:	-: so
when:	you sear-	-ch you	find:
something	like a	gold:	mine:

That's a lot of -ine/-ime endings (rhyme, line, fine, sublime, find, goldmine), and a lot of [u S:] rhythm patterns (in line, so fine, sublime, so when, you search, you find). Notice how the S: and the rhyme never land exactly on any of the beats simultaneously? A fairly balletic interplay of rhyme and rhythm if you ask me. :)

Lyrical devices

I've already mentioned meaning associations without going into too much detail about them, but now is the time. NOW IS THE TIME!!!

"One two three four" is a sequence of words you're probably used to having heard many times if you're an English speaker. Relationships between words like this can form a structure of their own, an association based on meaning or just by the words appearing together so often.

The meaning associations that are likely to work for most people are going to be simple and immediately obvious relationships between words; the less time someone has to spend scratching their head, the more time they get to enjoy themselves.

Commonly used lists of things can have strong associations. (A B C. 1 2 3. Do re mi.) I'm sure it was said before i dared say it that someone would lay it down *straight like a line from A to B - see?*

Opposites and phrases also work. Black/white. Cat/dog. Cat/mouse. Bread/butter. Bird/bee. Up/down, as we saw before.

Beyond here i have no right to lead you. Go grab some good rap records and a pen and paper, and with your newfound techniques of analysis, learn from those worthy of teaching you. And always remember: the groove is your master.

Structure great and small

So. I've taught you a little bit about rhythm, and a little bit about lyrics, and a bit about melody and a fair bit about harmony. Now it all gets put together.

There's no need to talk about harmony too much anymore. This of all the chapters is the one that gets the most thoughtful. This is where we abstract upwards from actual music theory and start to talk about the emotional dynamics of writing music. Like everything I talk about, it's been hinted at here and there beforehand in the guide but not looked at in detail. Well, seeing as this is the last chapter, and seeing as none of the books I've ever read go down this path (either because they're too expensive for me to buy or because they can't be bothered), it's time to talk about the crafting of entire musical pieces as it relates to everything up to this point in this guide.

In developing a good working familiarity with recognising, constructing and manipulating pattern and structure in texture, melody, harmony and rhythm, it's possible to weave these three elements together into a single cohesive unit. Melodies have their own rhythms, after all; harmonies carry their own melodies; all of it has its own texture.

Texture we haven't talked about much, but it gets touched upon the most here while discussing arrangement.

Different levels of musical structure

You get large structure in blocks of harmonic progressions: choruses, verses, intros. You get not quite so large structure as the chords that make up those chord progressions and the relationships between them. Even smaller structure still is the notes that make up the chords and the timbres of these notes. All of these things create patterns that make up music. Patterns can be varying combinations of melodic, rhythmic, and harmonic.

The music moves from one pattern to another, even using one version of a pattern at one particular time in preference to another version. For instance, a chord progression that starts off with two chords that have a certain interval relationship followed by two more chords with that same interval relationship: going along in root and major sixth pairs we can get C, Ami, G, Emi, F, Dmi, Bb, G; in root and major third pairs we can have C, Emi, F, Ami, Dmi, F, Emi, G.

These sorts of correspondences can just as easily be set up in melodies as in harmonies. In fact, given that melodies are much more portable in the song, it's probably easier to do. So different patterns may correspond in different ways to relate to one another, such as expressing the same harmonic relationships from different points.

Listen to how other music does these things, the patterns it sets up, their relationship, the changes it makes. (Take suitable amounts of drugs to appreciate this complexity if you must.)

Music, especially pop music, definitely doesn't lose anything by being split into chunks like verse, chorus, bridge, middle eight etc. That's how it's experienced, written and printed on lyrics sheets, so starting with a variation on the classic pop form certainly won't hurt to have a look at where structure's concerned.

Musical maps

Notation of the sort I'm about to use will help to flatten out the time of a song into something visual that you can take in simply by looking at it. If you've got anything against analysis, whether on principle or just because you enjoy being wishy-washy, you might gain some helpful knowledge from this part.

As said before, pop songs traditionally go like this for reasons which are probably more to do with the blues than I can really appreciate:

1. Intro
2. Verse
3. Chorus

4. Verse
5. Chorus
6. Middle Eight
7. Verse
8. Chorus
9. Outro

The intro and the outro are often based on the chorus. Each verse is going to sound more or less the same. So we can represent it this way:

C[intro]
 V[verse one] C[chorus]
 V[verse two] C[chorus]
 M[middle eight]
 V[verse three] C[chorus]
 C[outro].

Think of C, V and M as prototypical sequences of a sort, and think of the descriptions in brackets as names of variants on those prototypes. The verses are all going to have different lyrics, of course, and the choruses are all going to be more or less the same.

So while verse one has say a chord structure of C Dm F Am and begins *Ooh mama baby wanna dance all night witchoo*, verse two might have a chord structure of C Dm F Am and begin *Ooh baby mama wanna shag all night witchoo*, and verse three might be shortened by half and have a chord structure of something like C Dm7 F Am7 and begin *Ooh mama baby wanna marry you*. Or something. But ultimately these three verses are pretty similar and all derive from the same few chords. Basic elements are tweaked and repeated with slight variations from instance to instance. Repetition without getting repetitious.

You can then go down and specify the different bits of the song by their chord sequences to make a guide to those different bits:

C: C G/D Dm F/C C G/D Dm F
 V: C Dm F/C A/C C Dm F/C A/C C Dm F/C A/C C Dm A/C F/C
 M: C F/C Em G/D C F/C Em G/D

You can go all the way down to melody level if you want, as well as writing down verses, but i really don't feel like doing that. You could if you wanted to.

Note that C and V are played a number of times around the same sequence of chords, especially the verse. It doesn't have to be this way, of course.

Notice as well how there's lots of powers of two involved: the chorus has a sequence of eight chords, presumably all held for four beats or so. The verse has sixteen chords. The middle eight has eight chords. You can muck around with these powers of two if you want, and you'll probably come off sounding pretty avant-garde for it: why not pop an extra bar or two onto the end of your verse? Why not delete all the bits where the chorus has no singing in it?

Why not indeed.

My Bloody Valentine and Plastique Bertrand

My Bloody Valentine had *sort of* a running structure to their songs, the way they were put together. The choruses were often instrumental, the verses were usually a few chords looped over and over again, and so the songs had maybe two parts which swapped back and forth between the other. The opening track of *Loveless*, Only *Shallow*, goes a bit like this:

C, V, C, V, C
 C(horus, instrumental, also intro and outro): E F# A B E F# A B etc (with gnarly whooping noises)
 V(erse, with singing): B A F# E B A F# E etc

Loomer, the track immediately after that, has a similar sort of structure except with an extra bit. These chords aren't guaranteed to be accurate by the way; this is just how i played them:

C, V, B, C, V, B, C

C(horus, instrumental with mad flutey bits): G C7sus4 x 4

V(erse, with singing): G Cma7 Bb Cma7 x 2

B(ridge, instrumental with wooing guitars): G G-ish, G G-ish, Cma7 Cma7-ish, Cma7 Cma7-ish x 2

MBV evidently decided while producing *Isn't* Anything that their choruses were too important for lyrics to bespoil. I agree with them wholeheartedly.

Plastique Bertrand's *Ca Plane Pour Moi* is another song with a rather quirky structure. It's got the same 12 bar blues riff repeated all the way through, but some of the verses are sung back to back without a chorus to separate them, and sometimes instead of the chorus being sung there's a guitar solo. The verses and choruses and solo are as equally long as one another and tear along at a fairly quick pace, and it thus manages to have about five verses where pop songs typically only have three. From memory it structurally goes:

Intro (shorter than the other bits), V1, V2, Chorus, V3, Chorus, V4, Solo, V5, Chorus x 2

I'm probably wrong about this but i'll go and check and correct in a later edition if i am.

Structural extremes at odds

Let's loosen things up a bit and look into other structural ideas. One that became popular and informed a lot of techno is where you get things in looping sections, and each section just keeps looping around and around until it's time to start something else. This music leaves the larger song structure mainly to chance, loops the riffs and progressions and melody around fairly tightly and wants to do nothing but hang onto that loop for the purposes of tweaking the texture and making you dance. It's structurally simple music with a big emphasis on making you dance.

People bitch about dance music because it's got no concept of actual songwriting, and when i say song i don't just mean something that's got actual lyrics; i mean something that's got some deliberate musical structuring to tell you some sort of story. It's mainly because the people who kicked off the brand of dance music popular since the 1980s and 1990s (as opposed to other brands) weren't really interested in making labyrinthine works of music for pensioners to listen to on Sunday nights slumped into a comfortable chair. So yes, instead of learning about the intricacies of music theory, they pioneered repetition for a new generation and established the practice of ecstatic trances in Western civilisation. Good on them.

Then you get the other end of the spectrum: older classical music. Anyone who's ever listened to classical music will know it just doesn't stay still, and although it might return to certain motifs (melodies, chord progressions) it's a tumult of.. well.. music. In its traditional sense. It's played on instruments that most were a bit bored with by the time the instruments of more virtual music arrived, sure, but still.

There's more musical ideas in ninety seconds of Beethoven than there is in a double-CD set from Ministry of Sound and you know it. But there's probably more interesting sonic textures and groovy noises in that double-CD set than there is in Beethoven's entire repertoire. Now that technology's at a point where we can make any sound we please, the focus of music is shifting from the music we can make to the plain old noises we can make. For better or worse.

Nobody asked Beethoven to reinvent the violin (how would he have tuned it?), and modern electronic musicians are innovating their own noises with every new song they write.

Getting it arranged

What's arranging? Arranging is picking your instruments and giving them notes to play and noises to make in order to turn your song into actual music. In arrangement, you're effectively saying "Rhythm guitar, play this chord! Lead guitar, play this melody! Bass guitar, play this bass melody! Drummer, stop giving people lip and drifting out of time or we're buying a LinnDrum!"

Or even "First violins, you play this melody! Second violins, you play a counterpoint melody! Violas, you double the first violins an octave down! Cellos, you play this bassline! Horns, you stand at the back and underpin the strings with the root and fifth of this chord! Oboe, you play the lead melody over

the top of all of this!" etc, if you happen to be arranging for orchestra.

Anyway, arrangement. As was touched upon in the section on chords, arrangement is the art of rendering your music across your instruments. What you arrange depends on how much you've got to begin with, and how much you want to pack in.

Now, you're perfectly free not to sketch any musical structures before you start playing or sequencing. I definitely write as I track, though sometimes I do come up with something on the guitar first. But even when I'm tracking, sometimes it strikes me that a sawtooth-based pad would sound really good doubled by a Mellotron choir on the chorus to boost the drama of the song a bit.

In your classic Beatles-style rock quartet, the lead vocal and lead guitar share the task of melody, while the rhythm guitar lays down the harmony over which the lead melodies do their thing. The bass melodically and rhythmically underpins the harmony to anchor it down and the drums are pure rhythm. With a Nirvana-style trio, the rhythm and lead guitars are combined. The White Stripes take things right down to a huge guitar sound, drums and lead vocals. Going in the opposite direction, a quintet allows you to add keyboards for richer textural and harmonic possibilities, and more players still are needed for a decent horns section à la the Blues Brothers.

Orchestras are proof that the more people playing at once, the more power you have to make a big complex sound. Orchestras in particular are good fun for arranging because you have a huge palette of sounds at your disposal - the sharp sound of a violin versus the more rounded sound of the horns, the soft flute versus the piercing oboe, the mellow cello versus the farty-sounding bassoon. In a normal rock band you don't have a lot of decisions to make of that nature except maybe in the way of effects pedals or EQing. In electronic music, if anything you're making even more decisions than with an orchestra potentially because you're able to design the very timbre and character of the instruments to suit.

There's such a wide variety of arranging possibilities, some of which have been enshrined in convention, it's worth going over any and all music in your collection to listen in carefully as to which bit does what, and how all of those sounds come together the way they do to make up what you're hearing. Orchestras are a particular challenge since there are so many instruments doing their thing at once, and when the instruments start texturally melting into one another as they double the same melody or harmony you realise that despite the fact those old composers didn't have Korg Wavestations to shape their sounds on, they certainly knew what they were up to.

Mind in sound

The last thing that's possible to cover in this guide, the final section before the appendices start rolling, is dynamics. Now here I'm not talking about the sort of thing you maim with volume compression; I'm talking about telling a story with all these melodies and chords and rhythms and everything else I've talked about.

It's fairly important to be conscious of this sort of thing, because evoking a mood in the listener through the use of one's musical abilities is more or less what music's about. That mood may be *get up and dance*, it may be *listen to me tell a tale about terrible injustices*, it may be *sit down on the couch and mellow out, I've fallen out of love, life sucks and I want to die, aliens are coming to eat me*, or anything else. With music you create and transmit a message. Even without lyrics or samples, the message in your musical bottle may not take much decoding.

Think of music as a story of sorts. There's moments of tension, moments of certainty, moments of curiosity, ambiguity and every other human emotion. With music we communicate our own human experiences as we do with all sorts of art. If we're not recounting or trying to invoke feelings about things that have actually happened, we're trying to build new worlds from pre-existing components.

There's a major difference between music and prose, however: the words in a story are elements that put ideas into our heads by design of the author, and we react to those ideas once we've reconstituted them in our imaginations. Music works on a different level, one which is more emotional and abstract than words. Words that accompany fitting music are all the more effective. Think about that the next time you're watching a big-budget movie and the music is underpinning everything you see on screen.

If you want to emotionally manipulate people, just whack the right music on in the background. It can change the atmosphere of a situation completely.

But how is that emotional manipulation ultimately done? How are the stories told?

It's about making every element of the creation click and thus **synergise**, becoming more than the sum of its parts. It's about knowing how to make the rhythm work with the melodies work with the harmonies work with the instrumentation work with the lyrics work as a unit.

I can't tell you how to do make an emotionally moving piece of music, because my particular aesthetic and emotional buttons and switches are probably different to yours. The sounds and ideas that make me glad to be alive when they're pouring out of my speakers here in the Spiral aren't going to be everyone's cup of tea. I can however tell you that it helps to have everything behind the idea in the music. It helps to try to go for a tone if not an actual idea before you start rifling through arbitrary chord progressions to see what takes your fancy.

I can only tell you to go off yourself and pay attention to when other people are doing it to you, and with this knowledge you might be able to delve a bit deeper into the actual **craft** of music instead of understanding it only as an **art**. Putting aside the emotional high you get from a piece of music you love to analyse how the chords go and how it all fits together might seem the height of sacrilege to some, but listening closely to what's going on can be even more rewarding as you go into appreciating just how your buttons are being pushed by your sonic artisans of choice.

That's a fairly high ideal. Your goals might be more modest than rinsing pure, naked snapshots from your mind out into songs. You might just want to push a few buttons in your sequencer and have some idea of what notes to feed it so as not to completely offend the senses. Fair enough.

Final-ish words of inspiration

Composing music often involves borrowing and reusing other people's ideas—and lots of them—synthesising them together in one's own style to make something unique. There is nothing all that new under the sun; even with microtonality, the overwhelming majority of listeners and composers seem more than happy to stick to the equally spaced twelve notes that i've discussed here. Piss on anyone who thinks they can reinvent the wheel from scratch, because it's a fat waste of time to try.

And if you're smart enough to have reinvented the wheel, you wouldn't be reading this because i shooed you away in the preface. Go and check if you don't believe me.

When i talk about reusing past ideas, it's not only sampling i'm talking about: virtually every symphony written after Beethoven did his bit has an element of Beethoven in it. Because he was so good at doing what he did, people would be daft not to ride the wave of inspiration set in motion by Ludwig van. He himself had his own inspirations in the form of composers like Mozart, who in turn didn't come out of a vacuum himself.

That's how it's always been, and that's how it still is, and it's going to stay that way for some time to come. Ninety-nine percent of composers and producers are fooling themselves if they dare ignore what's come before them and to a great extent if they ignore what's coming up around them, and to as nearly a great extent if they only pay attention to one niche area of music.

Inspiration and precedent are truly everywhere, and there are no final rules on how your inspiration strikes, how your music has to sound, which chords you have to use in which key, what instrument you have to play, which music editor you have to use, or what sampled breakbeat you need to be the queen of drum and tech-trance bassbient house.

If there's anything you haven't understood in this guide which you feel like you'll do fine without, don't go to the trouble of trying to understand it. I won't email you personally to ask why you aren't using thirteenth chords in your songs or rapping about lemonade.

All the way through this guide i've been taking the piss out of different sorts of music which i have no aesthetic regard for and wearing my biases completely outside my jeans without the least bit of care. (I'd have made even more drum and bass jokes if i weren't counting on them being completely out of date by the end of this year.) In that spirit, my final words for you are a quote from Robert Anton Wilson, who is far wiser than i and should know much better than me to recommend the following to everyone:

*Enjoy what you enjoy,
and don't take crap from anybody.*

Further reading and bibliography

Denver, Ralph 1997, *The Guitar Handbook*, Alfred A. Knopf, New York.

Comprehensive chord charts and sections on harmony make this a kickarse book on par with none i know.

Wyatt, Keith & Schroeder, Carl 1998, *Harmony and Theory*, Hal Leonard, Milwaukee.

Halfway between a stiff musical textbook and the Ravenspiral Guide in tone with lots of rules on which chords to use where and a section on which transcriptions not to use for chord names, contravening most of what's said in *the Guitar Handbook*.

Adler, Samuel 2002, *The Study of Orchestration*, W. W. Norton, New York.

Light evening reading this tome most certainly isn't, but a rather inspiring guide to arranging for orchestra (and hence arranging in general) it most certainly is. It's an academic textbook so it's full of musical notation and just a bit on the expensive side, but it's a nice big hardback so you can kill spiders with it quite effectively.

Levine, Mark 1995. *The Jazz Theory Book*. Sher Music Company, Petaluna.

The book I would have set out to write as the Ravenspiral Guide; even for people who aren't into jazz, there's a lot to take away from this particular tome. Just make sure your sight-reading is up to scratch if you decide to get a copy..

Doty, David B. 2006. *The Just Intonation Primer, an introduction to the theory and practice of Just Intonation*. Other Music Inc, San Francisco.

A great primer on Just Intonation, including what it is, how to use it and how to make instruments play it. Features some helpful refresher maths for those who can't remember how to add fractions. (available from www.justintonation.net)

<http://www.smirnov.fsworld.co.uk/Intervals.html>
an amazing page on the different properties of the intervals (defunct)

<http://www.torvund.net/guitar/>
a huge resource on music theory, aimed mainly at guitar players

The Brief Chord Dictionary

chord	spelling	examples	hex
Major (I)	1 3 5	(C E G, D F# A)	47
Minor (Imi or Im)	1 b3 5	(C Eb G, D F A)	37
Augmented (I#5, Iaug or I+)	1 3 #5	(C D G#, D F# A#)	48
Diminished (Ib5, Idim or I°)	1 b3 b5	(C Eb Gb, D F# Ab)	36
Suspended fourth (Isus4)	1 4 5	(C F G, D G A)	57
Suspended second (Isus2)	1 2 5	(C D G, D E A)	27
Seventh (I7)	1 3 5 b7	(C E G Bb, D F# A C)	47A
Major seventh (Ima7)	1 3 5 7	(C E G B, D F# A C#)	47B
Minor seventh (Imi7 or Im7)	1 b3 5 b7	(C Eb G Bb, D F A C)	37A
Minor/major seventh (Imi/ma7)	1 b3 5 7	(C Eb G B, D F A C#)	37B
Diminished seventh (Idim7, I° or I°7)	1 b3 b5 bb7 [6]	(C Eb Gb Bb, D F G# B)	369
Half-diminished (Imi7b5 or I°7)	1 b3 b5 b7	(C Eb Gb Bb, D F Ab C)	36A
Seventh diminished fifth (I7b5)	1 3 b5 b7	(C E Gb Bb, D F# Ab C)	46A
Seventh augmented fifth (I7#5)	1 3 #5 b7	(C E G# Bb, D F# A# C)	48A
Major seventh dim. fifth (Ima7b5)	1 3 b5 7	(C E Gb B, D F# Ab C#)	46B
Major seventh aug. fifth (I7#5)	1 3 #5 7	(C E G# Bb, D F# A# C)	48B
Seventh suspended fourth (I7sus4)	1 4 5 b7	(C F G Bb, D G A C)	57A
Seventh suspended second (I7sus2)	1 2 5 b7	(C D G Bb, D E A C)	27A
Major seventh susp. fourth (I7sus4)	1 4 5 7	(C F G B, D G A C#)	57B
Ninth (I9)	1 3 5 b7 9	(C E G Bb D')	47AE
Minor ninth (Imi9)	1 b3 5 b7 9	(C Eb G Bb D')	37AE
Major ninth (Ima9)	1 3 5 7 9	(C E G B D')	47BE
Minor/major ninth (Imi/ma9)	1 b3 5 7 9	(C Eb G B D')	37BE
Ninth suspended fourth (I9sus4)	1 4 5 b7 9	(C F G Bb D')	57AE
Seventh flat ninth (I7b9)	1 3 5 b7 b9	(C E G Bb Db')	47AD
Minor seventh flat ninth (Imi7b9)	1 b3 5 b7 b9	(C Eb G Bb bD')	37AD
Ninth diminished fifth (I9b5)	1 3 b5 b7 9	(C E Gb Bb D')	46AE
Ninth augmented fifth (I9#5)	1 3 #5 b7 9	(C E G# Bb D')	48AE
Seventh augmented ninth (I7#9)	1 3 5 b7 #9	(C E G Bb D#')	47AF
Seventh flat ninth aug fifth (I7b9#5)	1 3 #5 b7 b9	(C E G# Bb Db')	48AD
Seventh flat ninth dim fifth (I7b9b5)	1 3 b5 b7 b9	(C E Gb Bb Db')	46AD
Seventh aug ninth dim fifth (I7#9b5)	1 3 b5 b7 #9	(C E Gb Bb D#')	46AF
Seventh aug ninth aug fifth (I7#9#5)	1 3 #5 b7 #9	(C E G# Bb D#')	48AF
Minor ninth diminished fifth (Imi9b5)	1 b3 b5 b7 b9	(C Eb Gb Bb Db')	36AD
Major ninth augmented fifth (Ima9#5)	1 3 #5 7 9	(C E G# B D')	48AE
Seventh flat/sharp ninth (I7#9b9)	1 3 5 b7 b9 #9	(C E G Bb Db' D#')	4ADF
Eleventh (I11)	1 3 5 b7 9 11	(C E G Bb D' F')	
Major eleventh (Ima11)	1 3 5 7 9 11	(C E G B D' F')	
Minor eleventh (Imi11)	1 b3 5 b7 9 11	(C Eb G Bb D' F')	
Minor/major eleventh (Imi/ma11)	1 b3 5 7 9 11	(C Eb G B D' F')	
Thirteenth (I13)	1 3 5 b7 9 11 13	(C E G Bb D' F' A')	
Major thirteenth (Ima13)	1 3 5 7 9 11 13	(C E G B D' F' A')	
Minor thirteenth (I13)	1 b3 5 b7 9 11 13	(C Eb G Bb D' F' A')	
Minor/major thirteenth (I13)	1 b3 5 7 9 11 13	(C Eb G B D' F' A')	
Sixth (I6)	1 3 5 6	(C E G A, D F# A B)	479
Minor sixth (Imi6)	1 b3 5 6	(C Eb G A, D F A B)	379
Added second (Iadd2)	1 2 3 5	(C D E G, D E F# A)	247
Added ninth (Iadd9)	1 3 5 9 (2')	(C E G D', D F# A E')	47E
Minor added ninth (Imiadd9)	1 b3 5 9 (2')	(C Eb G D', D F A E')	37E
Six/Nine (I6/9)	1 3 5 6 9	(C E G A D, D F# A B E)	479E

Hex what?

The hex spelling is for those of you using a tracker of some sort who want to program chords in based off of notes. Examples include: the arpeggiate command in traditional trackers (usually 0); Buzz's Polac VSTi track commands 01, 02, 04; Buzz's btdsys PeerChord's custom chord programmer, etc.

The interval equivalents in hex format are as follows:

0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C	C#	D	D#
C#	D	D#	E	F	F#	G	G#	A	A#	B	C	C#	D	D#	E
D	D#	E	F	F#	G	G#	A	A#	B	C	C#	D	D#	E	F
D#	E	F	F#	G	G#	A	A#	B	C	C#	D	D#	E	F	F#
E	F	F#	G	G#	A	A#	B	C	C#	D	D#	E	F	F#	G
F	F#	G	G#	A	A#	B	C	C#	D	D#	E	F	F#	G	G#
F#	G	G#	A	A#	B	C	C#	D	D#	E	F	F#	G	G#	A
G	G#	A	A#	B	C	C#	D	D#	E	F	F#	G	G#	A	A#
G#	A	A#	B	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
A	A#	B	C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C
A#	B	C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C	C#
B	C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C	C#	D

Intervals in hex format are as follows

- 1: minor second
- 2: major second
- 3: minor third
- 4: major third
- 5: perfect fourth
- 6: augmented fourth/diminished fifth, the interval of evil, tritone
- 7: perfect fifth
- 8: minor sixth
- 9: major sixth/diminished seventh
- a: minor seventh
- b: major seventh
- c: octave

- d: minor second + octave (flat ninth)
- e: major second + octave (ninth)
- f: minor third + octave (sharp ninth)
- 10: major third + octave (flat eleventh)
- 11: perfect fourth + octave (eleventh)
- 12: tritone + octave (sharp eleventh)
- 13: perfect fifth + octave
- 14: minor sixth + octave (flat thirteenth)
- 15: major sixth + octave (thirteenth)
- 16: minor seventh + octave (sharp thirteenth)
- 17: major seventh + octave
- 18: 2 octaves

F is as far as you can go with hex using one digit, so if you're using the Polac VST chord system and want to go up to an 11th you can have a seventh playing in one channel and whatever notes are left over playing in another, e.g.

C-3 04 47A0 D-4 04 3000

Glossary of terms

atonal, adj. As opposed to diatonic, a harmonic principle of the 20th Century giving all twelve notes of the octave equal footing. n *atonality*

arpeggio, n. The notes of a chord played in a melodic sequence. adj *arpeggivorous*

chord, n. A group of three or more notes of particular colour and convention, often sounded simultaneously. adj *chordigious*

chromatic, adj. As opposed to diatonic, employing any twelve notes of the octave without restriction to a particular scale. n *chromaticity*

counterpoint, n. One melody (or more) set atop another for harmonic effect. adj *contrapuntal*

diatonic, adj. As opposed to chromatic, employing notes of an eight-note scale such as the major or melodic/harmonic/natural minor. n *diatonicity*

harmony, n. The sum phenomenon of notes at any time as expressed in chords and melodies, as distinct from rhythm, timbre and melody. adj *harmonic*

melody, n. A "horizontal" sequence of notes, played one after the other; the phenomenon of such sequences as distinct from rhythm, harmony and timbre. adj *melodic*

microtonal, adj. A tonal system which employs subdivisions of the octave to a greater degree than the familiar twelve. n *microtonality*

rhythm, n. That which is left over when melody, harmony and timbre are accounted for. adj *rhythmic*

scale, n. A group of notes selectable as a palette from which to derive melodies and harmonies, such as the minor, Hungarian or Mimsinian scales. adj *scalextric*

timbre, n. The waveform characteristics of a sound, as distinct from harmony, melody and rhythm. adj *timbral*

tonality, n. The quality of a chord's third interval, whether it's major, minor or suspended. adj *tonalicious*

tone, n. Too many things to list here. adj *tony*

Cadence Appendix

NB: This bit seemed like a good idea, but hurt my brain too much to finish off properly. The accumulated data is left here for posterity.

This appendix will go through the different colours achieved when one chord follows another and qualitatively describe them. Two chords following one another is called a **cadence**.

There are potentially a lot of chord combinations to cover in this appendix. How many? Well, the idea was initially to see what sort of cadence proceeds from one sort of chord to the next. Starting with an example chosen from the forty-odd chords in this guidebook, the chord is contrasted against another chord played at 12 different intervals away from the root note. Forty times forty times twelve. Nearly 20 thousand possible combinations. Over two solid days of reviewing cadences, that would mean.

I believe it was a great philosopher who once stated: "Stuff that for a laugh."

So not every chord mentioned in this guide is covered in this matrix. Just doing all the triads by themselves would yield 432 combinations (six different triads followed by the same six different triads on different root notes). I've chosen sixteen chords of relative import to act as guinea pigs. Just to give you an idea: each cadence set takes half an hour of very repetetive but focussed listening, appraisal, categorising and typing. By the time it's finished, i'll have described over three thousand chord progressions over the space of over eight hours. So far it's been three, and i've got five hours to go.

The progressions will be notated using intervals. Have an example:

Progressions from major to..

major:

- striking/grandiose: b3, 3, b5, b6, 6

The above infers that if you want to start at, say, C, following C with the following chords will sound striking and/or grandiose: Eb, E, Gb, Ab, A. If this doesn't make sense, go and relearn your intervals and major scale, and try reading it again.

The progressions are qualified using a few different descriptions which i'll do my best to try to keep consistent. One potentially confusing description is *modulative*: this means the second chord will give the impression of having changed key. Other descriptions are either functional (loopable means you could loop these two chords one after the other for a good effect) while some are more the moods the progression suggests. Especially good chord pairs i come across are marked as nice.

None of the descriptions are 100% serious or objective, and some are unapologetically flippant. But i really am listening to all these pairs of chords, if only because at the moment i'm broke and have to find free ways to entertain and occupy myself.

The starting chords are indexed in the following order:

- triads: major; minor; suspended fourth; augmented; diminished
- sevenths: seventh; minor seventh; *major seventh*; *minor/major seventh*; *diminished seventh*; *seventh diminished fifth*; *minor seventh diminished fifth*; *seventh suspended fourth*; *major seventh suspended fourth (incomplete)*
- sixths: *sixth*; *minor sixth (incomplete)*

The target chords are indexed in the following order:

- triads: major; minor; suspended fourth; augmented; diminished
- sevenths: seventh; minor seventh; major seventh; minor/major seventh; diminished seventh; seventh diminished fifth; minor seventh diminished fifth; seventh suspended fourth; major seventh suspended fourth; seventh suspended second
- sixths: sixth; minor sixth

For the sake of easy reference, each set of progressions has been given its own page so that the lists aren't split between pages as they'd otherwise be.

Cadences from major to..

major:

- striking/grandiose: b3, 3, b5, b6, 6
- in key/poppy: 1, 4, 5
- understated/modulative: b2, 2, b7, 7

minor:

- in key/melancholy: 2, 3, 6
- modulative: 1, b2, 7
- striking/grandiose: b3, 4, b5, 5 (Cameronian), b6, b7

suspended fourth:

- teetery: 1, 4 (a bit), 7
- striking: b2
- optimistic: 2, 3
- grandiose/spooky: b3, b5, b6, b7
- strangely stable: 5
- melancholy: 6

augmented:

- loopable: 1, 5
- mystical: 2, b3, 4, b5, b7
- resolution-seeking: b2 (to 2mi), 6
- grand: 3, b5, b6
- sensible: 1, 7 (very sensible)

diminished:

- sensible: 1, b5, b6, 7
- resolution-seeking: b2 (to 2mi)
- loopable: 2, b3, 4
- melancholy: 3, b5
- mystical: 5, b7
- cheeky: 6

seventh:

- taking off: 1
- strange: b2, b3
- lilting: 2, 4, b5
- wanting to resolve: 3
- consonant: 5
- Latin: b6, b7, 7
- grand: 6

minor seventh:

- substitutey: 1, 2, 6
- strange: b2, b3, b5
- sweeping: 3, 4
- grand: 5,
- alien: b6, b7
- modulative: 7

major seventh:

- substitutey: 1
- loopsome: b2, 4
- strange: 2, 3, b5
- housey: b3, 6, 7
- modulative: 5
- grandiose: b6
- resolute: b7

minor/major seventh:

- eerie: 1, 2, b3, 3, b5, 5, 7
- staring upward in mute inner agony: b2, 4

- schlocky: b6, 6

- mystical: b7

diminished seventh:

- stable and melancholy: 1, 4, b6, 6, 7
- mystical: b2, 3, b7
- wants to resolve: b2
- conclusive: 2, b3, b5
- grandiose: 5

seventh diminished fifth:

- wanting to resolve: 1, 3, b5, 6
- loopable: b2, 2
- mystical: b3
- bluesy: 4, 5
- grand: b6, b7
- dignified: 7

minor seventh diminished fifth:

- grand: 1
- dignified: b2, 7
- 80s melancholy: 2, 4
- mystical: b3, b6, b7
- vanilla: 3
- wanting to resolve: b5
- histrionic: 5
- smooth: 6

seventh suspended fourth:

- substitutey: 1
- mystical: b2, b3, b6, b7
- smooth: 2, 3 (slightly less smooth), 4, 5, 6, 7
- grandiose: b5, b7

major seventh suspended fourth:

- substitutey: 1
- mystical: b2, 2, b6
- non sequitur: b3, 3, b5
- kinda weird: 4, 5, 6, b7
- wants to resolve: 7

seventh suspended second:

- happy: 1
- odd: b2, b3, 3, b5, 6, 7 (neutral)
- wistful: 2, 4, 5, b7
- down: b6

sixth:

- taking off: 1
- blissed Latin: b2
- grandiose: 2, b3, b5, 6
- surreal: 3, b4, 7
- comfy: 4, 5, b6, b7

minor sixth:

- strange: 1, b2, b3, 3, b5, 7
- dashing: 2, 5
- askew: b3,
- melancholy: 4, b6, b7
- comfortable: 6

The major is stable, so following it with most other chords, especially chords of the same stability, can either be vanilla or terribly jarring. Following it with less stable chords tends to lead the mood away somewhere.

Cadences from minor to..

major:

- modulative: 1, 7
- optimistic: b2, b3 (quietly)
- grandiose: 2, 3, 4, b5, 6
- melancholy: 5, b6, b7

minor:

- modulative: b2, 3
- pessimistic: 2, b3, 3, 4 (solidly), 5 (solidly), b6, b7,
- despondent: b5
- grandiose: 6, 7

suspended fourth:

- loopable: 1
- breaking away: b2, 2, b3
- pessimistic: 3, 5, b6
- sci-fi: 4
- weird: b5, 6, 7
- neutralising: b7

augmented:

- sci-fi: 1
- mystical: b2, b3, 5 (tonally), b6
- weird: 2, 4, 6 (shrewd), b7
- pessimistic: 3 (solid), b5
- loopy 7

diminished:

- loopy: 1
- pessimistic: b2, 6 (slight hope), 7 (neutral)
- melancholy: 2, 3, 4, b6 (Russian)
- dramatic: b3, 4, b5
- weird: 5, b7

seventh:

- breaking upward: 1, b2, 4
- French: 2, 5, 7
- weird: b3, 3 (atonal), b5
- sly: b6, b7 (more sad)
- lead to modulate: 6

minor seventh:

- expounding: 1
- loopable: b2, 7
- sophisticated: 2, 3 (modulational), 6 (sci-fi)
- grand: b3, b5 (sci-fi), b6
- carrying: 4, 5 (consonant)
- melancholy: b7

major seventh:

- contradictory: 1
- breaking upwards: b2, b5 (grand), 7
- odd: 2, 3, 6
- melancholy: b3, 5, b6
- break in clouds: 4, b7 (wants to modulate)

minor/major seventh:

- consolidative: 1
- looming upwards: b2, 2 (weird), b3, 3 (weird), b5
- gothic: 4, 5, b6, 7
- striking: 6, b7 (wants to modulate)

diminished seventh:

- shifting: 1
- wanting to modulate: b2
- loopable: 2, b3, 4, b6 (gothic), 7
- weird: 3, 5, 6 (floating)
- suspenseful: b5, b7

seventh diminished fifth:

- hanging: 1
- breaking upward: b2
- loopable: 2 (hanging), 5 (consonant), b6 (off), 7 (wispy)
- gothic: b3, 3 (weird), 4 (hanging), 6, b7 (stuffy)
- wanting to modulate: b5

minor seventh diminished fifth:

- consolidating: 1
- suspenseful: b2, b3, b7
- melancholy: 2, 3 (neutral), 5 (neutral), 6 (firm!)
- despondent: 4, b5
- mystical: b6, 7 (neutral)

seventh suspended fourth:

- weird: b2, b3 (neutral), 3, b5 (atonal), b6 (twisted)
- heightening: 4, b7
- neutralising: 1, 2, 5, 6, 7

major seventh suspended fourth:

- tension: 1, b2 (jarringly), b3
- weird: 2, b5 (jarring), 6
- ghostly: 3, 4, b6, b7
- mystical: 5, 7

sixth:

- modulative: 1
- loopable: b2
- reaching: 2, 3, b5 (energetic), 6, 7
- consolidating: b3, 4
- transmuting: 5
- melancholy: b6, b7

minor sixth:

- consolidating: 1, 4
- suspenseful: b2, 2, b3 (ghostly), 3 (ghostly), b5 (striking), 7
- contradicting: 5
- melancholy: b6, 6 (ghostly), b7

The minor is a stable chord, so following it with something else tends to develop it into other directions. It's a good way to evoke melancholy, especially when inverted to a less stable form in order to lead it off into the more nuanced directions of, say, a tritone-containing chord.

Cadences from suspended fourth to..

major:

- resolute: 1, b2, b3, 4 (desuspended), b7
- grandiose: 2, 3 (weird), b5, b6, 6, 7
- happy: 5

minor:

- resolute: 1, 4 (desuspended), 5, 6
- modulative: b2
- melancholy: 2, 3, b7 (kinky), 7
- harrowed: b3, b5
- grandiose: b6

suspended fourth:

- mysterious: b2, b3 (building), 3, 7 (modulative)
- neutral: 2, 6
- portentous: b5, b6
- overneutral: 4, 5, b7

augmented:

- sci-fi: 1, b6 (grand)
- portentous: b2, 2 (spookier)
- anticipatory: b3, 3, 4, b5, 5, 6
- settling: b7, 7

diminished:

- coiling: 1
- modulative: b2
- melancholy: 2, 4 (teetering), b6, b7
- anticipatory: b3, b5
- solid: 3, 7
- whimsical: 6

seventh:

- resolute: 1
- modulative: b2, 6
- weird: 2, b3, b5
- wanting to resolve: 3
- teetering: 4
- solid: 5, b6 (grand), b7 (subtle), 7

minor seventh:

- resolute: 1, 6
- weird: b2, b3, 3, b5, b6 (modulative), b7 (raisy)
- logical: 2, 4, 5 (sophisticated)
- mystical: 7

major seventh:

- resolute: 1 (nicely)
- tense: b2, b3, 5
- weird: 2, 3, b5 (non sequitur), 6 (modulative)
- floaty: 4, b6, b7 (carrying), 7

minor/major seventh:

- doomed: 1
- frail and doomed: b2
- spooky doomed: 2
- even more doomed: b3
- rotting and doomed: 3
- consonantly doomed: 4
- ghostly and doomed: b5
- just doomed: 5
- phantomly doomed: b6
- jarringly doomed: 6, b7
- sophisticatedly doomed: 7

diminished seventh:

- French: 1, b6, 6, b7
- anticipational: b2, 2, b3, b5
- spooky: 3, 4, 5
- melancholy: 7

seventh diminished fifth:

- leading somewhere: 1
- ponderous: b2, 2, b7, 7 (modulative)
- tense: b3, 3, 4, b5, 5
- mystical: b6, 6 (modulative)

minor seventh diminished fifth:

- ponderous: 1, b6, 6 (nice!)
- sinister: b2, b3, 4, b7 (quietly)
- gossamer: 2, 5
- logical: 3, 7
- tense: b5

seventh suspended fourth:

- consolidating suspension: 1
- mysterious: b2, 3 (jarring), 6
- tense: 2 (slight), 4, b5 (quite)
- weird: b3, b6, 7 (neutral)
- melancholy: 5, b7

major seventh suspended fourth:

- reaching: 1
- mysterious: b2, b6, b7 (curious)
- jarring/tense: 2, b3, 3, b5, 6 (bugging), 7
- nondescript: 4
- cruising: 5

sixth:

- resolute: 1, b7
- coiled: b2, 2 (less coiled)
- logical: b3, 4, 5 (comforting)
- striking: 3, b5 (optimistic), 6 (cheeky), 7 (cheeky)
- melancholy: b6

minor sixth:

- resolute: 1 (sad)
- tense: b2, 3 (jarring), 4 (logical), b5 (jarring), 7
- floating: 2, b3 (tenser), b6 (mystical), 6, b7 (melancholy)
- neutral: 5

The suspended chord's lack of a third makes it a good chord to resolve from. If it doesn't resolve to a nice stable triad, or a chord that contains a nice stable triad, it tends to just make things more misty and odd. It doesn't float quite the same way as the tritone does, however, so juxtaposing a suspended chord with a tritone can make for interesting results.

Cadences from augmented to..

major:

- grand: 1, 2 (modulative), 3 (smoothish), b7
- smooth: b2, b6 (suspiciously so), 7
- odd: b3, 4 (nicely), b5, 5, 6 (modulative)

minor:

- resolute: 1, b2, 2, 4 (modulative), b5, b6
- odd: b3 (slightly), b7 (modulative), 7 (modulative)
- spooky: 3, 5, 6

suspended fourth:

- unfinished: 1, b6
- ethereal: b2, 3, b7, 7 (nicely)
- climbing: 2, b3, 4
- odd: b5, 5, b6
- ponderous: 6

augmented:

- eerie: b2, 2, b3, 5 (gothic), 6, b7, 7
- consonant: 3, b6
- suspenseful: 4, b5

diminished:

- melancholy: 1, 2, 4 (neutral), b7 (nice)
- gloomy: 5 (gloomy), 6 (gloomy)
- portentous: b2, 3 (nice)
- weird: b3 (neutral), b5 (neutral), b6 (gloomy), 7

seventh:

- spooky: 1, b2, 6 (nice)
- odd: 2 (optimistic), b3 (jarring), 4, b5, 5, 7 (awakening)
- fitting: 3, b6 (wanting to resolve)
- gloomy: b7

minor seventh:

- strange: 1, 5 (blissy)
- building: b2
- odd: 2, b3, b5, 7
- contradictory: 3, 4
- relaxed: b6, 6, b7

major seventh:

- contradictory: 1, b3, 3, b5
- building: b2, b7
- odd: 2, 4 (striking), 7 (modulative)
- blissy: 5, b6 (modulative), 6

minor/major seventh:

- gloomy: 1, b2, b3 (oddly), 3, 4, 5, b6 (eerie), 6 (nice), b7
- askew: 2, b5, 7 (not too askew)

diminished seventh:

- gloomy: 1, 2, b3, 3, 4 (eerie), b5, 5 (striking), 6, b7
- building: b2, 7
- odd: b6,

seventh diminished fifth:

- misty: 1, 3, 5, b6, 6, b7
- eerie: b2, 2, b3 (jarring), b5, 7
- contradictory: 4 (eerie)

minor seventh diminished fifth:

- grand: 1 (eerie), 3, 4
- eerie: b2, 2, b5, b7, 7 (building)
- odd: b3
- gloomy: 5, b6, 6

seventh suspended fourth:

- cavernous: 1, b2, 5 (odd), 6
- consonant: b6
- optimistic: 2, b3, b7, 7
- contradictory: 3, 4, b5

major seventh suspended fourth:

- odd: 1, 2, b3, 3, b5
- gloomy: b2, 2, 4, 5, b6, 6, 7
- misty: b7

sixth:

- spooky: 1, 5 (resolute), b7 (sneaky modulative)
- resolute: b2, 2 (stretching), b3, 3 (nice), 4, b6, 6 (nice), 7
- odd: b5

minor sixth:

- gloomy: 1, b2, 2, b3, 3, 4 (consonantly), b6, b7, 7
- despairful: b5, 6 (quietly)
- spooky: 5

The augmented chord floats a bit due to a lack of a perfect fifth interval. This makes the chord especially useful when resolving things, and it imparts an excellently gloomy mood which may be resolved or developed by the next chord.

Cadences from diminished to..

major:

- sly: 1, b3, 5
- modulative: b2
- grand: 2, 4 (sci-fi)
- contradictory: 3
- solid: b5, b6, 6, b7 (nice), 7 (nice)

minor:

- pessimistic: 1, 4, b5, 5, b6
- resolute: b2, b3, 3, 6, b7,
- grand: 2, b3, b5, 7

suspended fourth:

- contradictory: 1
- resolute: b2, b5, 5, b6, 6, b7 (nice)
- odd: 2, 3, 4
- searching: b3, 7

augmented:

- floaty: 1
- misty: b2, 2, 5, b6, 6, b7
- eerie: b3, 3, 4, b5, 7

diminished:

- schlocky: b2, 4, b5, 5, 7 (not too schlocky)
- floaty: 2, b3 (eerie), b6 (striking), 6 (eerie), b7
- modulative: 3

seventh:

- resolute: 1, b2, b3, 3, b7
- cool: 2, 4, 5, 6, 7
- modulative: b5
- sinister: b6

minor seventh:

- natural: 1, b3, 4
- modulative: b2, 3, 6, b7
- surreal: 2, b5, 7
- cool: 5, b6

major seventh:

- resolute: 1, b2, 5, b6, 6, b7
- disco: 2, b3, 3 (odd), 4, b5, 7

minor/major seventh:

- gloomy: 1, b2 (resolute), 2 (jarring)
- despondent: b3, 3, 4, b5 (funnily), 5 (seriously), b6, 6, b7, 7

diminished seventh:

- building: 1, b2, b3 (direct), 3, b5 (direct), 6
- odd: 2, 4, b7, 7
- surprising: 5, b6

seventh diminished fifth:

- misty: 1, 2 (eerie), b5, b6
- eerie: 6, 7
- schlocky: b2, 4, 5
- odd: b3, 3, b7

minor seventh diminished fifth:

- building: 1, b2, b5 (nice), 5, b6 (nice)
- despondent: 2, b3, 3 (schlocky), 7
- eerie: 6
- schlocky: 4, b7

seventh suspended fourth:

- neutral: 1, 4
- optimistic: b2, 2, b3 (floaty)
- odd: 3, b5, 5, 6, b7, 7 (striking)
- resolute: b6

major seventh suspended fourth:

- jarring/odd: 1, b2, 2, b3, 3, 4, b5, 5, b6, 6, 7
- gloomy: b7

sixth:

- resolute: 1, b2, b3, 3, 5, 6, b7
- striking: 2 (stylish), 4, b5
- searching: b6, 7

minor sixth:

- gothic: 1, b3 (direct)
- odd: b2, 2, 3 (striking), b7, 7 (useful)
- gloomy: 4, b5 (over the top), 5, b6, 6 (striking)

The diminished is a compact, tense chord with a structure containing two stacked minor third intervals which end up forming a tritone from end to end. The tritone lends it that floating structure and so this chord resolves to a lot of things and evokes a gloomy/floating sound when followed with other chords that tend to float as well, like the seventh flat fifth.

Cadences from seventh to..

major:

- simplifying: 1
- grandiose: b2, 2 (sci-fi), 3, b5
- smooth: b6, b7, 7
- quirky: b3, 7, b6, 6 (slight friction)
- perfect: 4
- imperfect: 5

minor:

- contradictory: 1
- odd: b2, b3, b5, b6
- sombre: 2, 3 (smooth), 6 (smooth), b7, 7
- perfect: 4
- grand: 5

suspended fourth:

- neutralised: 1, 5
- odd: b2, 2, b3, 3, b5, b6, 6, b7, 7
- optimistic: 4, b7

augmented:

- gothic: 1, 2, b3, b5 (ethereal), b7
- suddenly sombre: b2, 5, b6 (misty)
- fearful: b3, 3, 4, 6, 7 (grand)

diminished:

- fearful: 1, b2, b7
- mystical: 2
- suspenseful: b3, 4 (jarring), b5 (jarring), 5, b6 (jarring), 6, 7
- carried: 3

seventh:

- dizzy: b2, 7
- cheesy: 2, b3, 3, b5, b6
- bluesy: 4, 5, b7 (sort of)
- modulative: 6

minor seventh:

- contradictory: 1, b3, b6
- modulative: b2, 2, b7
- sophisticated: 3, 6
- sombre: 4
- portentous: b5, 7
- warm: 5

major seventh:

- glamorous: 1, b3, 3
- modulative: b2, 2, 3, 7
- perfect: 4
- grand: b5 (jarring), b6
- resolute: 5
- blissed: b7

minor/major seventh:

- suddenly doomed: 1, 2, b3, 3 (modulative), 5, b6 (modulative)
- mystical: b2
- consonantly doomed: 4
- odd: b5, 6, b7, 7

diminished seventh:

- coiling: 1, 5, 6
- portentous: b2, b3, 3, b5 (striking), 6, 7
- odd: 2, 4, b6
- mystical: b7

seventh diminished fifth:

- souring: 1, b5
- mystical: b2, 2, 3, 5, b6, 6 (jarring), b7
- odd: b3, 4 (jarring), 7 (jarring)

minor seventh diminished fifth:

- souring: 1
- gloomy: b2, 2
- sad: 3 (smooth), b5 (smooth)
- sombre: 6, b7 (jarring)
- cutting: b3, 4, 5, b6, 7

seventh suspended fourth:

- rearing up: 1, 2, 4
- odd: b2, b3 (modulative), 3, b5, b6, 6, 7 (modulative)
- neutralising: 5
- grand: b7

major seventh suspended fourth:

- odd/unresolved: 1, b2, 2, b3, 3, b5, 5, 6, b7, 7
- tangential: 4
- misty: b6

sixth:

- sinking: 1
- modulative: b2, 2 (jarring), 3, b6, 7
- smooth: b3, 4 (final), 5 (final)
- odd: b5, 6
- grand: b7

minor sixth:

- souring: 1, b2
- schlocky: 2, b3 (smooth), b7
- gothic: 3, 6 (smooth)
- sad: 4
- odd: b5, b6 (modulative), 7
- grand: 5

The seventh or dominant seventh's main home is the blues, and using the IV and V chords with it make for a fairly bluesy sound. However, the tritone in the seventh chord gives it a floating quality that's definitely enhanced by all sorts of different chords. Some chords in particular it has a hard time meshing with, even.

Cadences from minor seventh to..

major:

- contradictory: 1
- sensible: b2
- grand/striking: 2, 3 (odd), 4, b5, 5, 6, 7 (sci-fi)
- exhausted: b6
- resolute: b7
- following: b3

minor:

- consolidating: 1
- modulative: b2, 2
- gloomy: b3, b6
- spooky: 3, b5 (sci-fi)
- resolute: 4, 5, b7, 7

suspended fourth:

- suspenseful: 1, b2
- inhaling: 4, 5
- sci-fi: 2, b6, b7
- neutralised: b3
- odd: 3, b5, 6
- modulative: 7

augmented:

- gloomy: 1, 3, b6, 7
- modulative: b2, 2 (sci-fi), b3, 6
- odd: 4, b5
- sinister: 5, b6, b7

diminished:

- sinister: 1, b2, 3, b5, b6, 6, b7
- gloomy: 2, b3, 4, 5, 7

seventh:

- contradictory: 1
- brightening: b2
- elfmanesque: 2
- continual: b3
- odd: 3
- plain: 4
- sinister: b5, 5, b6
- striking: 6, b7, 7

minor seventh:

- swaggering: b2
- sophisticated: 2, b3, 3 (unsteady), 4, b6, 6 (unsteady)
- modern: b7
- modulative: b5, 7
- obvious: 5

major seventh:

- brightening: 1
- modulative: b2, 2 (rough), 3 (rough), 5, 6,
- obvious: b3
- modern: 4
- wistful: b5, b6,
- relief: b7
- special: 7

minor/major seventh:

- modulative/doomed: 1, b2, 2, b3, 3, 4, 5, b6, 6, b7, 7
- very doomed: b5

diminished seventh:

- coiling: 1, b2
- sinister: 2, b3, 3 (campy), 5, 6
- gloomy: 4, b5, b6 (gothic), b7 (gothic), 7

seventh diminished fifth:

- odd: 1, 3, 4
- misty: b2, 2 (gloomy), 7
- gloomy: b3, b6, b7
- sinister: 5, 6
- about to resolve: b5

minor seventh diminished fifth:

- paired: 1
- gloomy: b2, b3, 4 (plain), 5, b6 (striking)
- misty: 2, 3
- sinister: b5, 6, b7, 7

seventh suspended fourth:

- neutralising: 1, 2 (lifting), b3, 3, b7
- modulating: b2
- lifting: 4
- odd: b5, 7
- moody: 5
- modern: b6, 6

seventh suspended second:

- sad: 1, b2, 4, 5, b7
- modulative: 2, b5
- wistful: b3
- odd: 3, b6, 6, 7 (striking)

sixth:

- contradictory: 1 (nice)
- modulative: b2, 2, 3, 4, b5, 5, 6 (grand)
- continuative: b3
- moody: b6, 7
- smooth: b7

minor sixth:

- continuative: 1, b3
- sinister: b2, 3, b5, 6, b7, 7
- modulative: 2, 3
- despondent: 4, 5, b6

If anyone finds these charts remotely useful and would like to see them finished, please do write to me. Email address in a couple of pages.

The Final Word

Changes

0.8.1 (25 August 2012)

- PDF export!
- Put table of contents into two columns

0.8 (24 August 2012)

- preparation for eBook formatting since eBooks are now a thing
- massive amounts of typesetting changes, ripping out all the numeric titles and just going with other stuff
- some prose rewriting, needs much more

0.7 (March 2010) – unreleased

- thought I lost this in a crash, but found it again
- edited introduction down heavily
- extra explication on chords and harmony

0.6 (13 May 2007)

- gutted rhythm section
- added just intonation/equal temperament notes
- fixed the stuff people keep emailing me about.. oh wait no i didn't..

0.5.3 (70 Bur 3172/16 October 2006)

- gutted lyrics section and added a brief section on rap, released public stuff

0.5.2 (31 Aft 3171/19 Nov 2005)

- added notes on jazznik stuff as well as various sixth chords, specific jazzy chords

0.5.1 (24 Con 3171/19 Jun 2005)

- added shorter guide to chord progressions
- more about intervals
- more about structure
- added glossary (such as it is)
- minor copy changes

0.5 (6 Con 3171/1 Jun 2005)

- added chromatic voice leading info
- redid rhythm section almost from scratch and added crossword diagrams
- copychecked and redid structure section in large chunks, exemplified more

0.5.-1.1 (*18 Dis 3171/1 Apr 2005)

- added hyperlinks of note
- laid out plans for chapters four, six and nine
- discussing bass in the rhythm section and added suggestions
- changes and edits here and there in the first five chapters
- discussing timbre melodies in the melody
- more in the lyrics section, though it's still woefully incomplete
- renamed a couple of chapters
- condensed the bit on different structural levels, need to exemplify more
- added stuff about pattern and psychology of music to chapter four
- conceived, added and started to complete the three thousand cadence appendix before abandoning it for the horrific headache it is

0.4.3 (71 Cha 3171/12 Mar 2005)

- fixed 3.3.1.10 diagram and redid a couple of missing ones in section 4
- kidnapped modulation section and put it in part 4

- added melodic minor scale and diagram
- front page index!
- added more furinotes underneath chords
- joined chapters 3a and 3b together
- enlarged the modulation section to include direct and pivot modulation
- cut out some of the ranting about atonality and serialism :)
- updated the weather report
- added tritone substitution and plotted for chapter 6
- made the title page prettier
- stole closing comments at end of chapter 9 from end of chapter 4
- scowled as the number of pages peaked at 74 then dwindled the more errant page breaks i fixed

0.4.2 (68 Cha 3171/9 Mar 2005)

- switched to OpenOffice for editing duties (yay PDF export!)
- redid the chord diagrams in Eve while listening to 2001, imported as EMF files
- added and commented on a heap more chords
- added section on cadence and dominant sevenths
- somehow came up with ten more pages of info in the space of three days
- new location: <http://www.ravenspiral.com/ravenspiralguide.pdf> (this version upped to old URL)
- URL finally hyperlinked, i am a twat for not doing it sooner and i apologise!
- strangely, the filesize seems to have dropped 100k or so even though there's more in it.. go figure..

0.4.1 (66 Cha 3171/7 Mar 2005) UNRELEASED

- more chords, extended the ninth section and bolstered the dictionary
- added more in structure
- extended and split off the hex section in the chord dictionary

0.4 (46 Cha 3171/15 Feb 2005) UNRELEASED

- updated contact information
- checked through the copy for errors (thanks George!)
- combined preface and 0.1 statement of purpose
- revamped chords section, added more chords and cluster section
- reformatted and made a note to do all the graphics again one day
- general editing and tidying duties
- changed section Z to 'The Final Word'

0.3.1 (46 Cha 3170/15 Feb 2004)

- added interval chart

0.3 (45 Cha 3170/14 Feb 2004)

- extra bits in scales section
- big addition to interval section
- longer introduction to chords
- scrapped rhythm section and redid it
- added to lyrics section
- added preface
- renamed variations section to harmonic progression
- added to harmonic progression section
- added more on arrangement

0.2.6 (44 Cha 3170/12 Feb 2004) UNRELEASED

- very minor copy changes

0.2.5 (34 Cha 3170/02 Feb 2004)

- changed lyrics section
- tweaked structure section

0.2.4 (26 Con 3169/21 Jun 2003)

- added to structure, lyrics and rhythm sections

0.2.3 (23 Con 3169/18 Jun 2003) - not publically released

- started structural section
- started lyrics section

0.2.2 (17 Con 3169/12 Jun 2003)

- got some fan mail today which prompted me to start writing again :)
- added subsection on basic counterpoint and a rant about serialism
- started rhythm section

0.2.1 (36 Aft 3168/24 Nov 2002)

- added subsection on key
- expanded section on variations
- added stub pages for other chapters

0.2 (36 Aft 3168/24 Nov 2002)

- added material on resolution, I/IV/V relations
- added melody chapter
- started variations chapter
- added index and front page

0.1.5 (34 Aft 3168/22 Nov 2002)

- added heaps more about scales
- edited other material to make it less harrowing to read

0.1.4 (34 Aft 3168/22 Nov 2002)

- added more scale stuff and notes on key vs scale
- fixed fluff in circle of fifths thingy
- changed chord spellings from Roman to Arabic numerals
- * Roman numerals from now on refer only to chords, not to single notes
- added thanks bit

0.1.3 (33 Aft 3168/21 Nov 2002)

- added inversions and transcription info
- added chord progression chapter
- planned and plotted later sections

0.1.2 (33 Aft 3168/21 Nov 2002)

- added whole tone scale and modes

0.1.1 (32 Aft 3168/20 Nov 2002)

- PDF version with adapted guides, created better structure and added diagrams

0.1 (32 Aft 3168/20 Nov 2002)

- GIF-only version

Planned for the future

- more on chord substitution and other tricks in chapter six
- more on structure and arrangement in chapter nine

Find Me

Email: kurrel@ii.net

KvR: k-bird

Details are correct as of 25 August 2012.

Thanks

For additions, suggestions, error spotting and moral support: IntrospectiveJourneys, Aaron McCammon/_mute, DANCEnrg, jts, bramble, George Buckley, Cataline Wen, Zephod, Ed Blake/cyanphase, Padraig Mac(la! la!)lain/Nimheil

Software

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