

SOUND ON SOUND

The World's Best Music Recording Magazine

ARRANGER PAGES

Tips For Pop Arranging

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Technique : Composing/Arranging

If something's letting down your pop tracks, it could be the arrangement rather than the song itself at fault. **Derek Johnson & Debbie Poyser** offer some advice on how to make sure your music gets the star treatment it deserves.

You don't need us to tell you how important arranging is. If a song is a bare room with plain walls, empty so that you can see its structure, the arrangement is the carpet on the floor, the pictures and hangings on the walls, the furniture that adds life and comfort to the room, enhancing its good points and disguising its weaknesses. Sometimes you're quite happy to sit on the floor in a bright empty room, but often you want to luxuriate in beautiful or stimulating surroundings.



Training in proper classical orchestration takes a long time and lots of formal instruction, but training to be a competent arranger of pop music requires only your ears, your brain, and a pile of your favourite records. Some of the ideas in this feature we picked up simply through careful listening to commercial recordings. The validity of this approach is proved by the fact that when we did some extra background reading and research we came across many of the same ideas in textbooks. In addition, as an educated listener, you probably *know* what works in a pop track: you may just need to identify your instinctive reactions and apply them to your own music.

Eric Turkel, at the start of his excellent book *Arranging For Synthesists* (available from the SOS Bookshop -- see contact details on page 46), provides a set of guidelines for anyone about to begin on an arrangement. He suggests first becoming acquainted with a song's lyrical content, and understanding it if possible. If you haven't written the lyrics, this makes good sense, and even if you have written them you should consider what atmosphere is evoked by them. It's going to help you arrange the song if you have a feeling of its mood. Then get together a list of sounds and/or samples you might like to use for it, together with the sections of the song where you think they'll work. A list of off-the-cuff rhythmic and harmonic ideas can also give you some starting points. Then begin trying out the ideas, discarding all but the best ones. As Turkel observes, "Arranging is like assembling a jigsaw puzzle with more than one solution and too many pieces."



These arranging ideas, which inevitably also cross over into production, can't pretend to turn anyone into a fantastic arranger by themselves, obviously, and they're directed more towards actual songs than, say, dance instrumentals. But you can try them out right away, and they might get you thinking about why some things work in musical terms and some things don't.

Beginnings & Endings

How do you start your songs? Make an effort to think of a few different ways to introduce variety and grab the listener's attention right from the word go, especially if you're working on a whole album's worth of songs. For example:

- Fade a long instrumental intro in from nothing, so that the song begins as just a suspicion in the listener's mind and gains strength gradually. Check out 'This Is The Day' from The The's *Soul Mining* album for a good example of this tactic -- a sparkly, haunting, music-box synth part twinkles in from the far distance. You strain to hear this lovely sound and your delight only grows as it becomes more audible. By the time the song proper kicks in, you're hooked.



- A variant on the above idea is starting a song with ambient noise and bringing the instruments in over that. Air's 'La Femme d'Argent' uses a technique something like this, with rain as the ambient noise, and it works beautifully. (As a side note, there's really only one thing you can hum in this whole atmospheric instrumental, and that's the distinctive bass line, so Air make sure to bring that in right at the start -- after all, it's their hook.) Using ambient sounds related to the subject of the song is a well-used but potentially winning idea too: Kraftwerk's 'Autobahn', opening

with car noises, is an example, as are Madonna's 'Swim' (from *Ray Of Light*), which starts with the sound of running water, and 'Good Morning Good Morning', by The Beatles, which starts with a cockerel crowing.

•A deliberately weird intro can work with the right kind of song: listen to Air's 'Le Voyage De Penelope' (from *Moon Safari*), which kicks off with thoroughly out-of-tune, heavily-processed piano oddness, for one example. Erasure's 'Chorus', from the album of the same name, uses the weird noise intro -- bloopy, bleepy, sci-fi synth textures -- to good effect. *However*, do not let this type of intro last too long! Boredom will set in very rapidly if you don't get going on the song.

•It may sound obvious but don't forget you can pile in immediately with a catchy riff. Kraftwerk, amongst many other examples, do a lot of this (just think of 'The Model' or 'Pocket Calculator'), as do Blondie for at least half the tracks on their huge classic 1978 *Parallel Lines* album. The advantage is that the track is stamped immediately with a strong identity and the listener's desire for something to happen is satisfied right away. Thundering in with a big, brash, hooky chorus, lyrically the simpler the better, is another time-honoured trick.

So, once you've started well, how are you going to set about finishing? Give this some thought before the whole arrangement is done, otherwise you might find that all you can do is fall back on a fade. There are other possibilities: stopping dead is a well-used one which can be very effective. Stopping the backing track dead and leaving a final vocal phrase *a capella* can also work. Sequencer users should be familiar with the idea of dropping out an instrument at a time until there's only one left. Alternatively, lose instruments in stages and then build them up again to a big finish. How about not finishing at all? Segue or crossfade into the next track! False endings, too, can be good for a laugh.

Less Is More

If you listen to a lot of good pop arrangements, it will soon become apparent to you that most of them don't contain huge numbers of parts. Five elements at one time -- counting the drums as one -- is generally the most you'll hear (sometimes six) and this rule seems to extend across style boundaries. Laying on more and more parts may be a waste of time, as there's only so much the brain can follow before the sound turns into a mush and the impact of the individual parts is lost. However...

•Five parts doesn't necessarily mean only five instruments: extra texture can be added through doubling parts, either straight or an octave up or down, with different timbres. Know *why* you're using doublings, though -- for example, you might add a flute to an oboe part because it lends delicacy, lightness and accent to the deeper warmth of the oboe, without overpowering the oboe or the rest of the arrangement.

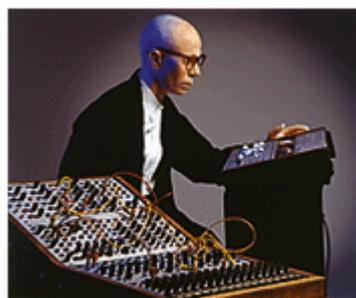
•If you are using a lot of instrumental parts, it's wise to keep the individual parts simple and create your effect through how they work together. Vince Clarke is a master when it comes to using several monophonic lines to create a complex polyphonic sound.

Vox Top

Good vocal ideas can make a decent track positively sparkle. Here are a few quick ones to try:

•How about bringing in BVs shortly ahead of the line they're meant to harmonise, so that the lead vocal is, perversely, actually an echo of the backing vocal line? Prince has used that one. Another Prince special, although it's not unique to him, is doubling a line with the same thing sung an octave higher or lower. (To twist this same idea for instrumental use, consider doubling a bass line with something high and tinkly, like a glockenspiel.)

•Apply different EQ, processing or effects treatments to the two halves of a vocal line, for a call-and-response feel. ABC's classic 'Poison Arrow' does this to good effect. ABC also alternate high falsetto vocal lines with lines sung an octave lower -- listen to 'Tears Are Not Enough' from the *Lexicon Of Love* album. The feel is of a manic multiple personality holding an internal dialogue with other parts of himself.



•If you have a dramatic, important vocal phrase that you'd like to highlight, stop the whole backing track dead so that the phrase is completely *a capella*.

•Process just the backing vocal with a weird effect such as ring modulation or vocoding, leaving the lead *au naturel*. And/or pan the BV far left or far right to the lead vocal's central panning, so that the backing vocal comes in at the listener's ear like a sneaky aside or offstage comment -- it's even better if this idea fits with the song's lyrics.



•Always give a lead vocal space. It's great to punctuate a vocal with instrumental parts -- a bass line that takes off on little extemporised flourishes between vocal phrases, for example, sustains interest -- but make sure that punctuation is what you're doing and that instrumental riffs and hooks don't fight with the vocal for the attention of the listener. Likewise, try to avoid using instrument parts in the backing track that are in the same register as the lead vocal.

Captain Hook

We all know the importance of a hook in a song -- it's the vocal or instrumental bit you just can't forget. Lee Mavers of the La's, who wrote 'There She Goes', has the various hooks of this catchy little track to thank for his continuing royalty cheques from radio play, covers and ad campaigns worldwide. Be crafty with your hooks. For example:

•Use a hook in more than one way. It's a classic arranging technique to have the main vocal melody played by instruments too. To go way back in time, Frank Sinatra's 'In The Wee Small Hours Of The Morning', arranged by the legendary Nelson Riddle, opens with the vocal melody played by a delicate piano/celeste layer, it has a breakdown section which features the vocal melody, played on strings, and very little else, and a fragment of the melody is used again, once more on celeste, to finish the song. You'll never forget the tune after all that! (This track also yields another arranging hint: echoing the song's lyrics with the arrangement. When Frank sings the line "down to my shoes", the string line descends to match, reinforcing the lyrics subliminally.)

•As implied by the above, repetition is a good thing in pop music, even though many consider that a lot of current hit tracks take the principle to extremes! If you've created a good riff or clever part, making sure to use it at least two or three times will help create a feeling of continuity. However, if you want a track that doesn't become boring, repetition has to be balanced with novel ideas.

More Strings To Your Bow

String arrangements will sound more varied and lively if you use the different registers wisely. Strings backing a chorus could begin in their lower registers and move up, to end in their highest. The Frank Sinatra track mentioned in the main part of the article does this for its chorus, as does ABC's 'The Look Of Love' and any number of other tracks. The effect is of 'lifting' the chorus and increasing its impact towards what should be a powerful ending. Speaking of strings, one of the oldest tricks in the book is using a single, high, sustained string note behind a chorus or wherever you need to create extra impact or energy. Another tip which will give your string arrangements more realism and integrity is creating string counter-melodies which work on their own, in terms of melody, harmony and rhythm, rather than just playing the song's chords with a string sound whenever you want a string part. Also note that string parts sound most effective if they are able to sustain and fade out naturally when you want the part to end, so allow the time and space to allow this to happen.

Staying with background instruments for the moment, most modern synths come with a plentiful supply of pad voices of different kinds. Be careful which you choose if your main background sounds are pads. The sound chosen needs to be very interesting because there will probably be little going on in the pad part rhythmically. Using a tempo-pulsing sound or a filter-swept pad (often heard in contemporary synth-based music) can provide movement and interest without distracting from the main action. Another idea to enliven a static pad is to arpeggiate whatever it's playing, possibly adding timed delays, if that fits with the feel of your track.

When you listen back to your arrangement you should be asking yourself whether something new happens often enough to stimulate new interest, and also whether the best bits of the track are repeated sufficiently often for them to become lodged in the mind of the listener.

All Together Now...

Choruses are very important. Indeed, some arrangers recommend working on arranging the chorus before you do anything else, because the other parts of the song should proceed from it. There are various things you can do to heighten the interest of choruses:

- An idea used well on the Dubstar track 'The Day I See You Again' (from the *Disgraceful* album) is to lay a new set of chords underneath a part that's already been repeated several times with its original chords. The effect is unsettling, adding tension and twisting the tune to show new aspects of itself, and once more helps to maintain listener interest.

- After a certain number of repetitions, even the most catchy of choruses can begin to pale. Well, a change is as good as a rest. Take a hint from Dubstar's 'Stars' (again, off *Disgraceful*) and move as far away from the established harmonic/melodic content of the song as you can, into a dissonant section. This creates a feeling of instability. Then return to your chorus, which now sounds even more poignant and tuneful, and somehow new again, as well as producing the return to stability that's a basic desire in the listener.

- On the same tack -- varying choruses -- turn the first half of a chorus into an instrumental, then bring the vocals back in for just the last few lines. This engenders a curious feeling of satisfaction in the listener. Another tip for listener satisfaction: observe the rules of tension and release when working on melodies, because these two opposites provide a lot of the power of a melody. Melodies that proceed upwards usually create tension, while a feeling of release is engendered when the tune descends from the tension point.



Listen & Learn

There's a lot to be learned from classical music. It's hard to pinpoint any one thing that you'll pick up from this source, but if you use a lot of samples of *real* instruments in your work (and even if you don't), listening to the work of a wide range of composers will provide plenty of ideas with regard to new textures and instrumental combinations. If you read music, see if your local library has any miniature scores available to loan. Have a score open while you're listening to a piece, and if you hear something you like -- a texture, an arrangement of a particular chord, an instrumentation of a melody and accompaniment -- copy out the bars that interest you, with a note of instruments used (but watch out for transposing instruments!). You now have a template that you can apply when arranging your own work. And if you don't read music, perhaps now is the time to learn; it'll be an invaluable facility. Check local colleges for courses.

If you'd like some instant insight into how a real orchestra works, and how the various instrumental groups interact, there are three classic text books: *Principles of Orchestration* by Nikolay Rimsky-Korsakov, *Orchestration* by Walter Piston, and *Orchestration* by Cecil Forsyth. These are of most use if you read music, obviously. For those who don't (or don't read much), Eric Turkel's *Arranging Techniques for Synthesists* is an invaluable book, crammed with common-sense ideas and tips, solid information gleaned from much experience. You'll get more from it if you read music, because he prints lots of examples to illustrate his points, but the text alone is enormously enlightening and written in a simple, engaging style.



The last thing to say is this: though you can certainly improve your arrangements by applying simple principles, rules are made to be broken, and frequently are!

SHOESTRING ORCHESTRA

Creating Orchestral Arrangements On A Budget

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Technique : Composing/Arranging

Use of a full symphony orchestra remains a luxury afforded only to the world's top-selling artists or film composers. But with a little help from technology, the sound of convincing strings and blaring brass *is* achievable on a budget. **John Rowcroft** reports, and offers advice to anyone seeking to follow his example...

How on earth do aspiring composers convince hard-nosed film bods that they are the right choice to write the score for a forthcoming blockbuster? This is the question one such aspiring composer found himself pondering recently at the tail end of a Masters course in Composing Film and Television Music. Finishing off my showreel with some tasty orchestral showpieces, I thought, might just set me apart from the crowd, but there was one *small* problem... symphony orchestras don't come cheap, with upwards of 60 musicians to pay, and other high costs to meet such as studio and engineering fees... Many of today's lower-budget productions (cartoons, computer games and so on) opt for the orchestral 'mock-up' which can offer very passable results with just a couple of samplers and a small studio setup (see Philip Meehan's feature on the subject in SOS March '99). This might fool most of the punters most of the time, but there are still limitations. Because some sampled instruments are more convincing than others, you even tend to write the music to avoid those sounds that will sound unrealistic. *Pizzicato* strings? Fine. Tinkly glockenspiel? No problem. Exposed oboe solo? Umm... perhaps not. Any instrument with such enormous expressive potential as the oboe still defies emulation in an exposed setting.



One solution to this problem lies somewhere between the MIDI mock-up and a full live recording. It is now relatively common practice to beef up acoustic recordings with synthesized or sampled instruments which will probably go unnoticed by even discerning ears -- adding sampled basses to a small string section is one example. My problem was, however, that I couldn't even afford a *small* string section at full Musician's Union rates -- and trying to organise such a gathering on a charitable basis is no mean feat.

Lateral Thinking

Thinking positively, I looked at what I *did* have at my disposal:

- Limited studio time using my college's facilities -- a hall, isolation booth, well-equipped control room and a good selection of mics.
- My own small setup at home comprising a Kurzweil K2000 synth/sampler, Korg X5DR module, PC running Emagic's *Logic Audio* with Audiowerk8 soundcard, a DAT machine, a desk and a couple of effects units.

My cunning plan was to recruit the best players I possibly could from London's various music colleges, and offer their group/ensemble a nicely recorded demo in return for playing for me. I threw in a Travelcard and a couple of beers as well!

Putting up notices at The Royal College of Music, The Guildhall School of Music and The Royal Academy of Music, I soon had the phone ringing. My initial plan was to get a string quartet (two violins, viola and cello), a brass quintet (two trumpets, horn, trombone and tuba) and a wind quintet (flute, oboe, clarinet, horn and bassoon). These three groups between them could cover all the acoustic instruments I needed; basses and percussion would be provided by my trusty K2000. Each group would have a three-hour session in the hall in which to record their own demos. I would then record individual players in the isolation booth for my material (ie. dry and totally isolated), and edit it together later in *Logic Audio*.



Of course, things didn't quite pan out as I'd hoped. The wind quintet turned into a solo oboe due to exam pressures on the other players, and the string quartet cancelled at the last minute in favour of earning £800 playing at some garden party in a stately home... some people.

Very Lateral Thinking

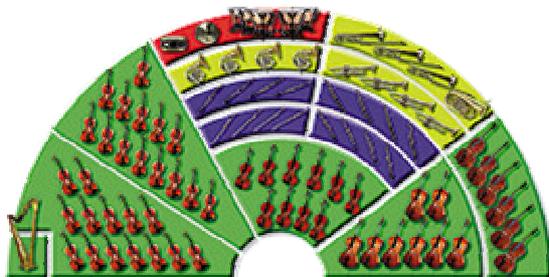
Fortunately, a couple of weeks previously, I'd spotted a pretty hot string quartet playing at Brighton train station and (as you do) bowled over to get their card. In fact, I'd been collecting these kind of contact numbers all year -- some of the string quartets busking at Covent Garden and other tourist traps are seriously good p

layers (usually final year or post-grad students at one of the London music colleges) and the possible classical stars of tomorrow! Anyway, I booked the Brighton station lot for £200 for 6 hours (a serious bargain), decided to play clarinet myself and badgered a friend into playing flute (she also doubled piccolo). Bassoon would suffice from the Kurzweil, and the brass quintet were still up for it.

You may have noticed that including myself, I had only booked a total of 12 players -- and you might fairly conclude that this hardly constitutes the 'big Hollywood sound' I had been looking for. This, however, is where technology comes to the rescue. There's nothing new about the idea of overdubbing, but today's MIDI + Audio sequencers really do allow a different level of control in this type of application. Building up a full orchestral piece to multitrack tape is certainly possible, but having tried it myself I can assure you that the timing and tuning problems alone are enough to knock the idea firmly on the head, let alone the vast number of tape tracks you need. Computers on the other hand open up a multitude of possibilities, and even a modest 16-track setup like mine can be coaxed into handling an orchestra's worth of sound. The rest of this article explains how I went about it, with a few pointers as to how you might recreate what I did. For more general advice on how to approach this kind of project yourself, see the three 'Sound Advice' boxes dotted around this article.

Sound Advice 1 -- If You Don't Do Dots...

An orchestrator is someone who converts a composer's score into an arrangement which real musicians can play! Don't think of this as a cop-out -- top film composers such as John Williams and Danny Elfman use one or more orchestrators all the time, simply because they don't have time to work out the fine details of their musical arrangements themselves. Professional orchestrators are quite used to working from either a demo recording, a MIDI file, or a 'short score' -- a condensed 'piano' version of the music with two (sometimes more) staves.



The Recording Sessions

This was a nice easy gig for the college engineer, because everything was recorded straight from one mic, through a preamp and onto DAT in mono. We opted to use a Neumann U87 mic through a Focusrite Green preamp on most of the instruments, but for info on choice and positioning of microphones I refer you to Hugh Robjohns' previous SOS articles on miking up brass, winds and strings (see SOS January and April '99). I sent a continuous click from a sequencer into the player's headphones, having deliberately opted for pieces with no tempo changes, and then sat in the booth with them as they played. Because everything was to be

edited together later, the players could tackle their parts one phrase at a time until they got a good take. This really allowed me to get note-perfect performances, even though the players had never seen the music before.

Seeing as the players were having to play along to nothing but a click, you might well wonder whether the feel of the music suffered. The answer, for a number of reasons, is no. Everybody in a real orchestra plays a relatively small expressive role, but due to the sheer number of players, a huge expressive range results. The 'overdub and re-edit' approach to constructing orchestral arrangements wouldn't work nearly as well on, say, string quartet music, because all the subtle, intimate communication which takes place between just four players interacting would be lost. On the other hand, intimate is one thing orchestral music ain't.

My decision to sit in with each player also meant that whatever the limitations of the notated music might have been, I could always sing them a line as I wanted it, with just the right phrasing and rhythmic feel. I did also make sure that they heard a MIDI demo version of each piece so that they had an overview of the style I wanted. Most of the players responded beautifully, but of course it helps if your musical lines really suit the instrument in question -- getting string players to swing, for example, is something that just cannot be taken for granted!

When recording the woodwinds, I made sure I got a couple of good takes of each phrase just for safety. Good players tend to breathe naturally in much the same place each time they play, but I had to keep an eye out for inconsistencies between any parts which were supposed to move together.

I tried to obtain at least four good takes of each phrase for the editing process later, though this wasn't always possible due to time constraints. I also paid great attention to the string players' bowing, ensuring sometimes that they were consistent between overdubs, sometimes making sure they weren't. Why? Well, different string players vary their phrasing by means of different bowings, but if you watch a real orchestral string section in action, you'll soon notice that each group (such as the first violins) all play with the same up and down bow strokes together. If you want to build up a convincing overdubbed string section sound, therefore, your single player's changes of bow direction must remain consistent over all four takes. On the other hand, for long notes which require a change of bow direction in the middle, players in a real orchestra will naturally stagger their individual bow direction changes, thus helping to hide the slight break in sound which results. Varying the point at which bow changes took place in each of my takes helped me greatly at the editing stage.

KeySound Advice 2 -- What's In An Orchestra?

Orchestras come in many shapes and sizes, but the defining factor is that there is more than one player per part (musical line) as opposed to chamber groups which are strictly one player, one part. The table below shows the closest line-up to a 'standard' symphony orchestra that we have today.

There are at least 86 players (the number of percussion players will always vary). Here's how I reduced that number down to a less wallet-endangering 12. I used careful editing in *Logic* to convert a single violin into a whole section, and did the same for the violas and cellos. Basses are less exposed in the orchestral 'mix' and work well just as samples. One flautist should be able to play both flute parts and the piccolo part; the same goes for the oboe/*cor anglais* and clarinet/bass clarinet.

Of the woodwinds, the bassoon and bass clarinet stand the best chance of working well as samples if they're not too exposed in the arrangement -- bassoon samples also usually start to sound way too harsh much above middle C. Playing a bassoon sample in the depths below Bb1 (the bottom note of the bassoon) should yield a reasonably convincing contrabassoon too.

Each of the brass instruments can play multiple parts on the same instrument, and luckily my trombonist played bass trombone too -- although don't always expect this to be the case. You can more or less expect a flautist to double on piccolo but bass trombone and trombone don't always come as a package!

Finally, percussion is definitely the least problematic section to emulate using MIDI instruments, especially if samples of rolls and special effects are available. In some cases, such as suspended cymbal rolls, a separate sample really is advisable. There was no live percussion on my recordings at all.

FURTHER READING

Setting the right DAT recording level: *SOS* January 1995. Noise and how to avoid it: *SOS* May 1995. A Concise Guide to Compression & Limiting: *SOS* April 1996. The Mysteries of Metering: *SOS* May 1996. Minimising Mixer and Effects Noise: *SOS* July 1996.

A Typical Symphony Orchestra

STRINGS	WOODWIND	BRASS	PERCUSSION
1st Violins x 16	1 Piccolo	4 Horns	3 Timpani
2nd Violins x 14	2 Flutes	3 Trumpets	Xylophone
Violas x 12	2 Oboes	Two Tenor Trombones	Snare Drum etc.
Cellos x 10	1 Cor Anglais	Bass Trombone	Harp (grouped with percussion page)
Basses x 8	2 Clarinets	Tuba	
	Bass Clarinet		
	2 Bassoons		
	Contrabassoon		

Post-Production

My first task was to get the recorded DAT material into my PC. I simply recorded each instrument into *Logic Audio* through the S/PDIF digital in on my soundcard. Once I was happy with an edited line, I would use the glue tool to digitally mix down into a new WAV file, delete all the debris of other sequences to preserve hard disk space, and move on to the next instrument. Orchestral arrangements can very quickly become huge, so limiting the number of WAV files that your sequencer has to look at will reduce the workload for your PC's hard disk and processor, and help to keep playback glitch-free.

Strings

Strings were the hardest orchestral family to deal with because of the challenge of creating a string section sound from just one instrument. Having been through this process, I would really recommend trying to get at least four good takes of each phrase, even though I often found I could only obtain three or fewer. (When really pushed for time, I found I could make do by giving priority to the first violin parts, as these are the most prominent parts for most of the time.) Having recorded the track into *Logic Audio*, it was quickest to align the whole lot to a click at the same tempo at which the players were recorded, so that only small tweaks were needed to get individual phrases exactly in time with the click later. The worst problems here were with really tight 'chugging'-type accompaniment figures; the various takes often required very detailed editing to bring them in time with one another. In some cases, cutting and shifting of individual notes proved unavoidable.



In the few cases where I actually had about six good takes of a string phrase, simply layering them up one on each track created a lovely rich ensemble sound. However, an element of chance came into getting the best sound, and this was where I really had to use my ears. For example, muting one or more of the six tracks sometimes actually yielded a better sound due to the chance distribution of tuning variations in each take.

Where I only had a couple of good takes, I might create a new copy of each, take them into *Logic's* Time Machine processor and retune one up and one down three or four cents (see screenshot, left). This gave me four sequences to layer, and with the copied sequences fractionally delayed or advanced, a reasonable ensemble sound usually emerged. Occasionally, though, the result would be too 'synthy' with chorus or phasing effects creeping in. Experimentation with retuning and time-shifting timing is the only answer here, but always I found it worthwhile to try muting individual tracks first, since often only two of the takes were 'incompatible'. Two notes with tuning and timing too close together, for example, often introduced an undesirable flanging effect.



I generally aimed for a tuning 'spread' of around 6-8 cents, although if I could hear that a take was particularly sharp, I might just try to guess how many cents were needed to flatten it, aiming for concert pitch. This is amazingly good practice for your ears, but on reflection I could have cut corners by using the likes of *Antares Auto-Tune*.

The whole layering process is a slightly hit-and-miss affair, but here are a few more points you might wish to consider:

- Violin -- higher notes (especially on the E string) started to make a beautiful rich sound quite easily after only three layers were combined. The lower G and D strings were more problematic though, with a tendency towards 'boxiness'. A little mid-EQ cut around 900Hz helped.
- Cello -- fewer layers than with viola or violin proved necessary to create a balanced section sound. Three or four usually did the trick.
- Synth strings/samples -- I also tried layering together some synthetic strings and samples for good measure! I actually found that subtle use of my Korg X5DR's 'Marcato Strings' patch worked better than my ultra-realistic Peter Siedlaczek samples, perhaps because a little tonal contrast helped create a real ensemble effect. Careful use of programmed volume curves in *Logic's* Hyper Edit helped mask the effect (see the screenshot, bottom left). I had to keep an eye on levels, panning, and reverb levels for the extra samples, to keep them consistent with the audio tracks. In the end, the effect was 'felt' rather than heard, though it definitely added something.

* Care with detune -- based on my experiences, I would advise anyone attempting a similar project not to go mad with detuning effects. Chorus is likely to make strings sound artificial, and a bigger tuning spread than about eight cents will make your strings sound like a school band!

•Belt and braces -- if you're not sure whether to double, say, your first violins with flute then go ahead. You can easily remove the flute later if you want to.

Sound Advice 3 -- Preparing For Your Orchestral Recording Sessions

Note: if you find some of this classical talk in this box a bit baffling, you might like to enlist the services of an orchestrator -- see the Sound Advice 1 box at the start of this article.

•Booking players (or 'fixing', as it is known) requires many patient hours of telephone hell in my experience -- especially if you're not paying top whack. Strangely enough, people suddenly become incredibly flexible and responsive to your needs when the money's right!

•Make sure that your brass players are all drilled into bringing the mutes you need, and that woodwind players are aware that you need their doubling instruments.

•In preparing a timetable for the day's recording, remember that all wind players need at least 10 minutes to warm up. Apart from getting them into the swing of things, their instruments will physically become warmer, causing the pitch to rise to where you need it.

•If the woodwinds start complaining about their 'lip', they're not referring to the tirade of abuse that you've been enduring all day but their poor old embouchure (gob muscles to you) which can only last so long -- so plan accordingly.

•String players need handling with care too -- put them under too much pressure and you might start to wonder if you'd mentioned that your piece was actually written in equal temperament.

•In preparing readable parts for this kind of session, a scorewriting software package such as *Sibelius* or Coda's *Finale* really comes into its own (I used *Finale 98*). If the score is already produced with one of these packages then extracting individual parts is a doddle.

•Make sure parts are transposed correctly -- ie. up a major second for B flat trumpets and B flat clarinet, up a fifth for Horn in F, and so on. Also, remember -- clarinetists usually own both B flat and A instruments, so if you're not sure which will sound best for your score, do your clarinetist a big favour and print out parts in both A and B flat (you could apply this to trumpet in C and B flat too).

•For wind parts where more than one instrument is playing (say where you have two horns playing the same melody a sixth apart), it's a good idea to print the parts on one staff. That way, during recording, you can get the player to play first the upper, then the lower parts after each other. The chances are that they'll play both with similar phrasing and feel, and this helps greatly when it comes to the editing stage, because they'll match!

•Before you start recording, tell the players (especially the woodwinds) to 'project' in the same way they would at a normal orchestral gig. Ask any decent orchestral musician and they'll tell you that the dynamic markings on the page all go up a couple of notches when playing in a big orchestra, especially when the dreaded 'solo' marking appears on the page. What might sound like a tender and heartfelt solo to the audience is invariably a really big 'projected' sound if you're sitting next to the player in question. Obviously, this greater volume of sound involves a change of timbre, and if you can recreate that sound you'll certainly obtain a more authentic orchestral recording.

•If your string parts are full of double stops (two notes played together by one instrument), then unless they are particularly easy (such as open strings), you may as well mark them '*divisi*' -- which means one player will perform each note separately. The reason for this is simply that string players really don't like playing double stops -- they're hard! If you really know your orchestration, some very characteristic 'stringy' effects are to be gained from double (or triple, or even quadruple) stops, but in many instances

they just cause unnecessary jolts or tuning problems, so play safe.

•Finally, don't forget to take a chromatic tuner to your session, and check your players' tuning at regular intervals. Recording booths such as the one I used are lethal for tuning problems. Off goes the air conditioning when you press Record, and up goes the temperature, resulting in most instruments rising in pitch throughout the course of the recording. One thing that these sessions also taught me was that most players are to some extent dependent upon playing with other instruments for gauging their tuning. Put them in a room solo and strange things can start to happen. Leave that tuner on then, and watch the needle on long notes!

Wind

Editing the woodwind and brass parts was a much simpler process than the strings because most wind orchestration is on a one player-per-part basis. Where for example I had scored specific effects such as four horns in unison, I just layered as appropriate. Where I only had one good take, I found that adding some subtle, slowly modulating chorus worked well for brass, but not so well on woodwind.

As I started combining brass and strings, I found that it was actually the slight tuning discrepancies between the two which started to make things sound really big! Where brass and wind were working as a pad to the strings I liked this effect, and left the tuning well alone. Where solos or counter-melodies were appearing out of tune, though, I did tweak -- sometimes cutting out individual notes to be processed by the Time Machine' in *Logic*.

Mixing

Once again, I would refer you to Philip Meehan's article in *SOS* March '99, since mixing should really take place according to the layout of a real orchestra (see diagram on page 136). That means panning instruments as they appear in a real orchestral layout, and adding more reverb to instruments at the back such as percussion and brass, to simulate the hall in which a real orchestra might be playing.

Adding in the MIDI instruments -- basses, bassoons and percussion -- was a relatively straightforward affair. For the basses, I used the Korg X5DR's 'Marcato Strings' patch, layered with a Kurzweil K2000 solo bass sample for edge and a little warm vibrato. I also added ensemble *pizzicato* samples just to fatten things a little.

Orchestras are usually heard from some distance, and so I found that panning anything too hard left or right sounded unnatural -- especially with strings. I used a stereo 'Concert Hall' preset on a Zoom 9010 reverb unit, and no other processing except a little corrective EQ was necessary. In terms of balance, referring to CDs of other orchestral recordings helped greatly. It was tempting to crank woodwind solos up to artificially high levels, but the best results were obtained in the end by ensuring that the accompanying instruments were sympathetically quiet instead -- just as a good conductor would. I used a combination of *Logic's* automated volumes for individual audio tracks and 'burned in' gain changes to balance tracks.



Does It Actually Work?

It takes a lot of time but this approach really can work. Securing realistic-sounding results depends largely on the content of your instrumental arrangements (I found the most successful passages were those with plenty of doublings), but I hope this article has at least hinted as to what and what not to expect. I decided to attribute my finished recordings to the 'LCM/RCM Studio Orchestra' -- a cheap trick, but who's going to know it doesn't really exist?

SAMPLE THE ORCHESTRA

Creating Realistic Sample-based Orchestral Arrangements: Part 1

Published in SOS December 1999

Technique : Composing/Arranging

CREATING REALISTIC SAMPLE-BASED ORCHESTRAL ARRANGEMENTS: PART 1

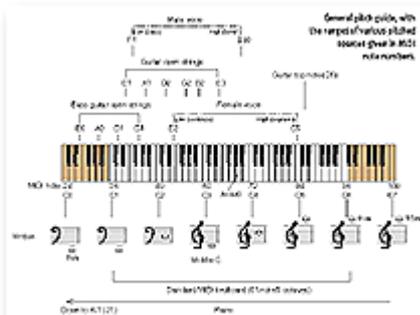
These days, any decent synth or sampler offers plausible orchestral sounds -- but there's much more to creating believable arrangements for orchestra than realistic samples. Keyboardist/composer **Dave Stewart** offers some guidance, passes on some advice from the pros, and explains how orchestral samples were used to create an arrangement for the latest Geri Halliwell single.

The century groans to a close, and technology rules the earth. To the delight of corporate accountants everywhere, more and more music is produced on computers, slashing production costs to the bone. As karaoke and discos replace live bands, musicians who once found employment in clubs and pubs must now earn a living delivering pizzas or administering aromatherapy. Before long, all music will be composed by quasi-intelligent computer programs, and either piped directly into our brains via the Internet or performed by dancing anthropoid robots bearing a maddening resemblance to Natalie Imbruglia or Ronan Keating. It's a mad, market-driven, sci-fi hi-fi world, but as we leap like lemmings into the 21st century, it's amazing to reflect that the orchestra is still with us.

On paper, a collection of 80-odd musicians playing acoustic instruments whose design has changed little since the days of Mozart sounds like a daft (and expensive) anachronism. The reality, however, is quite different -- sit in a large concert hall and hear an orchestra play, and you will experience one of the most beautiful, subtly blended sounds that mankind has invented. Today, when most of our popular music is electronically generated or processed, the idea that some of our most expressive and powerful music still emerges from instruments made largely of wood, metal, horsehair and catgut seems more and more extraordinary.



Although electronic instruments have wonderful creative potential, the current mania for built-in obsolescence is unwelcome and self-defeating. This trend is particularly prevalent in keyboards and computers, high-risk zones where last year's hip equipment is next month's pile of festering, devalued scrap plastic. In contrast, the orchestra represents a cultural decision not to innovate for innovation's sake, but to stick to a sonic formula which has worked for hundreds of years. Everything has already been tried and tested; the sound of a 40-piece string section, for example, balances the noise of 16 brass players. A quartet of French horns can hold their own alongside trombones and trumpets, but a solo French horn, played quietly, blends beautifully with flute, oboe, clarinet and bassoon. If you want bottom end, a combination of six pizzicato (plucked) double basses, contrabassoon and orchestral bass drum will give you a seismic rumble on a hip-hop scale. At the top end of the spectrum, the transients of glockenspiel, crotales (high-pitched tuned cymbals) and triangle will penetrate the thickest wall of sound. MIDI velocity response is all well and good, but these instruments have real dynamics; the enormous level difference between a solo *cor anglais* and the roar of the whole orchestra playing *sforzando* is a compelling reason to build digital recorders with 90dB of headroom.



Samplers & Sound Libraries

Although you can get a plausible orchestral sound from modules and workstations (see the 'Black Box Data' panel elsewhere in this article for some of my personal recommendations), their fixed menu of sound programs eventually palls. At this point, professional composers working with MIDI inevitably acquire a sampler or two (or 19 -- more on this in a moment). Once

fiercely proprietary, these machines now read each others' disk formats, so building a sound library is easier than ever -- and with the cost of sampler memory now deflated to sensible levels, it's possible to buy 128Mb machines at reasonable prices. This is good news for committed orchestral samplers, as squeezing the outpourings of 80 musicians into 32Mb of RAM was never a practical proposition!

In response to the growth in sampler memory, orchestral sound libraries on CD and CD-ROM have proliferated. With CD-ROMs offering up to 650Mb of samples, we can now use our samplers to reproduce virtually all the playing styles of the orchestra without having to take out a second mortgage. Next month, this article will continue with a review of 40 CDs which feature orchestral sounds, ranging from cheap and cheerful disks aimed at the beginner to lavish, expensive volumes for the serious samplist.

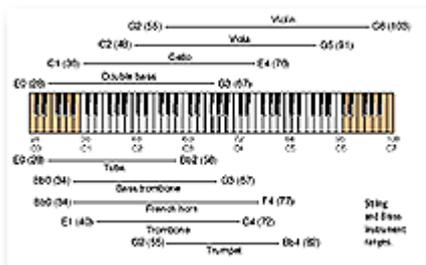
"I Seem To Have Considerably More Samplers Than You..."

The accumulated gear of some pros reads like a Samplers-R-Us warehouse stock list. Film composer Richard Hartley owns four Akais (an S3000, S1100, and two S1000 playback models), two Roland SP700 playback units and two Emu (E6400 & E111XT) samplers, all crammed with the maximum amount of RAM. Jeff Rona, a US composer/flautist who writes the music for TV's *Chicago Hope*, bought 10 Akai S2000s when commissioned to write the score for Ridley Scott's film *White Squall* -- their combined 320Mb of RAM was obviously woefully insufficient, as he also owns five Emu E4Xs, two Kurzweil 2500s, and an Akai S3000 and S5000. But the Imelda Marcos 'Golden Sandal' award for unwarranted sampler acquisition has to go to Jeff's colleague Hans Zimmer, who Jeff claims "has five times as much gear as me." Don't you just hate these guys?

Thankfully, it is possible to produce a convincing orchestral sound with fewer than 57 samplers. Personally, I use just one 32Mb Akai S3000, and when its memory fills up, I record the sounds to a pair of tracks on a Tascam DA88 tape and start again. Most musician/programmers I know use one or two 32Mb machines, often augmented for orchestral purposes by a Roland JV1080 or JV2080 fitted with the ubiquitous Orchestral card.

Getting Started: Solo Instruments

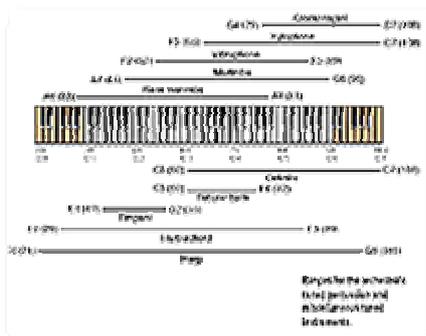
The best way to understand orchestral sound is to go and see live orchestral performances on a regular basis, but if you live in Ipswich or are a member of a vicious motorcycle gang, this may not be practical. An alternative approach is to use your MIDI equipment to become familiar with the sound of the individual instruments. A good starting point would be a solo instrument, such as the flute. Find a flute patch whose sound you like, and try to play a melody line which suits that sound. You can play the flute sound on its own, or over a simple chordal backing; in either case, remember to articulate each note cleanly, as a real flute sounds its notes one at a time with no overlaps! Try the same thing with other solo woodwinds: clarinet and oboe are lovely melody instruments which will carry a tune convincingly if played in the right style.



You may find that your MIDI unit's solo woodwind patch works well for slow melodies, but is less effective for fast runs and rhythmic playing. This phenomenon (which affects instrumental samples across the board) may well be the result of how the original samples were performed -- if the player was playing quiet, long slow notes, there will be little attack in the sound. If this is the case, look for an alternative patch whose samples 'speak' immediately. Sometimes, over-zealous programmers deliberately make instruments speak late by putting automatic fades on the front of the samples, which I find very irritating. The intention seems to be to produce a realistic swell in volume, but to my ears it invariably sounds bogus.

If realism is your goal, you should also be very careful how you use vibrato. Real instruments use tons of the stuff, but it sounds far more subtle than the insistent queasy wobble produced by a keyboard's mod wheel. With a little careful programming, you can reduce the amount of vibrato introduced by the wheel, so that a greater movement of the wheel is required before the tell-tale synth effect kicks in.

Though it may be stating the obvious, remember that a single flute cannot play chords -- that requires three flutes or more! However, a trio of flutes playing chords is a lovely sound, so don't rule out that option. Of the four main woodwinds, the oboe is perhaps least well suited to chordal work, and the bassoon is often reserved for the bass note in a woodwind chord. To hear how these instruments blend together in chords, experiment with various combinations of the four main woodwinds: flute, oboe, clarinet, and bassoon. Later, you can try adding a quiet French horn. A bass clarinet or contrabassoon can add ominous low bass notes, and if you want a stratospheric top line, reach for the piccolo.



Overlapping notes reduce the apparent realism of a solo wind instrument, as well as using up extra voices on your sampler. Songwriter/programmer Andy Reynolds has this tip: "You can get rid of overlapping notes by using the matrix editor of a sequencing program like *Logic Audio*, but it's much quicker to simply limit the sampler program to one voice (two if the samples are stereo). That way, any overhanging notes will be cut off by the new note, which sounds so much more realistic."

String Ensembles

It goes without saying that every orchestral instrument is capable of solo performance, but the noble and moving effect we associate with 'orchestral' sound is traditionally produced by ensembles of instruments playing together. Take, for example, the string family, whose members roam in great herds across the left side of the orchestral seating plan (take a look at Philip Meehan's article in *SOS March '99* for a diagrammatic look at the seating plan of a typical modern orchestra). A fairly typical setup would be 22 violins, eight violas, eight cellos and five double basses. For the purposes of wage distinction, the violins are split into First and Second groups, which might number 12 and 10 respectively. One violin alone can stir the emotions, but the sound of 22 playing together is absolutely glorious (provided all are performing the same piece of music, of course...).

From a technical point of view, what seems to happen in a unison note is that the players' small differences in tuning (no frets, remember) and varied vibrato combine with the natural reverb of the concert hall to produce a luscious, deep 'chorused' sound which knocks spots off that of any electronic processor. A 4-note keyboard chord whose pitches have been distributed amongst the 43 string players will therefore sound much bigger, lusher and more emotional than any noise a keyboard could make (and I speak as one who has loved keyboards for 30 years).

Brass Tacks

Traditionally, orchestral brass contains no saxophones, resulting in a purer sound than that of a pop brass section (saxes, being reed instruments, have a slight 'buzz' in their sound which you won't hear from a trumpet or trombone). The other big difference between pop and orchestral brass is the latter's use of French horns, instruments which can switch from a subdued singing tone to a trouser-flapping foghorn blast.

Recreating such manic musical mood swings with a sampler is a near-impossible technical challenge, and most MIDI practitioners agree that the orchestra's brass instruments are the hardest to emulate with samples. Richard Hartley explains: "To get a French horn sounding real, you'd have to use about five different samples per note -- quiet, medium, loud, muted and crescendo notes." This would certainly involve a lot of programming, but for those prepared get their hands dirty, these performance variations are all available in decent form on CD-ROM sound libraries. Creating all the various combinations, splits and layers necessary to simulate a brass instrument in heat can be a tedious business, but in my experience the results can be very good, giving at least an accurate and musically acceptable impression of the real thing.

Black Box Data

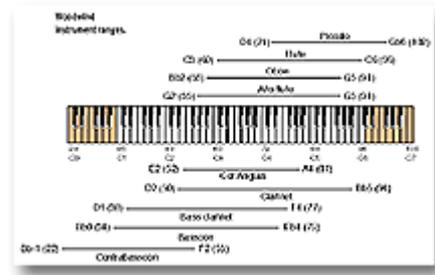
Technology has not put the orchestra out of business, but it now gives us the opportunity to experiment with orchestral arrangements without first undertaking years of formal musical training. Equipment-wise, all you need is a MIDI controller (keyboard or guitar) and a MIDI unit equipped with some decent orchestral sounds. For the latter, my two personal medium-budget choices are a Roland JV1080 fitted with the Orchestral expansion card, or an Emu Proteus 2000 (descendant of the impressive Proteus 2, the world's first 'orchestra-in-a-box'). Both take advantage of their respective companies' excellent sound libraries, and are designed to let you build up arrangements in layers by assigning different instruments to different MIDI channels (to make the most of this multitimbral facility, you will obviously need to use a sequencer or sequencing software).

Satisfactory results may also be had from keyboard workstations. The Korg Trinity has the best string sounds (pizzicato and bowed) I have heard from a keyboard, with the added bonus of superior-quality reverb and chorus effects. Older Korg keyboards, such as the T3 and O1/W, also contain some very useful orchestral samples, the former boasting a fabulous clarinet and a bright, strong solo trumpet. The Kurzweil 2500, though not cheap, features some great orchestral sounds. Several contemporary Roland keyboards (for example the XP-series workstations) will read the JV-series sound expansion cards, and a film composer colleague has recommended the orchestral samples in Roland's Sound Canvas Pro. However, when it comes to the source sound libraries, my feeling is that the American company Emu Systems have the best pedigree in presenting well-recorded, seamlessly looped and perfectly tuned samples.

String Arranging

Vast tomes have been written on this subject, but here are a few simple tips:

1. When writing chords for strings, you can get away with using fewer notes than you would on a keyboard. I have heard 3-note string chords which sounded so big, I would have sworn they contained 4 or 5 pitches.
2. Feel free to divide the strings into sub-groups for the purposes of chordal or contrapuntal writing. For example, in a simple C major chord, the cellos can be divided to play C2 and G2, while the violins play C3, E3 and G3
3. Don't neglect the violas. Though most of their range overlaps with the violins, they have a more mellow sound, and their lower range is very effective.
4. The double basses can sound dry on their own, but are very well suited to playing a bass line in unison with the cellos. Placing the basses an octave down from the cellos gives a very strong bass sound reminiscent of octaves in a pianist's left hand.
5. When using a sequencer to program string parts, do not use quantisation unless it is absolutely necessary. Once quantised, strings always sound late, so be prepared to advance them by 15-30 milliseconds.



Finally, this thought from composer/ arranger Richard Niles, whose orchestral arrangements have featured on four number one hits this year: "The bass end is usually pretty well covered in pop recordings, so if I'm arranging strings for a pop session, I often leave out the double basses. I tend to write for the top end, and go for memorable melodies and licks which will add something to the track. When I'm booked to do pop strings, I always try to include harp, which gives a song a real commercial 'whoosh' going into the choruses!"

More Thoughts From The MIDI Maestros

- Simon Darlow (songwriter/TV music composer): "If I need a harp glissando, I use a regular harp program and do a quick sweep up the keyboard on the white notes -- then I edit the notes to be the right pitches for the music. It takes a little while, but it's so much quicker than going through all my samples looking for a harp glissando in the right key."
- Andy Reynolds: "When I want a sense of rhythm, orchestral percussion focuses the timing and adds realism to an arrangement. I like to use played triangle plus programmed timpani and rattly orchestral snare drums, and I add lots of reverb for a concert hall effect."
- Richard Hartley: "I always use real woodwinds if I can. Strangely enough, if you use real woodwinds over sampled strings, it makes the sampled strings sound more real too!"
- Jeff Rona: "The real guys always sound better -- you can't beat 80 people pouring out their emotions. But samples are useful -- if your arrangement sounds murky and crappy with samples, it'll sound murky and crappy with the real guys! The samples are instructive. Listen to them, and make sure you get the instrument ranges right."

Creative Pitch

The number one basic requirement for orchestral arrangement and composition is that you understand the pitches of the instrument(s) you are writing for. This may sound obvious, but relatively few musicians can tell you the pitch of their own singing voice, let alone the range of a *cor anglais*! The four diagrams in this article will help you understand how the pitches and ranges of orchestral instruments relate to commonplace sound sources like guitars, bass guitars, pianos and human voices.

Though the orchestra encompasses seven octaves, you can use a standard five-octave MIDI keyboard to access its entire range. If an instrument's high or low notes stray outside the nominal 5-octave span, simply set the

keyboard's Transpose function to +12 or -12; this alters the transmitted MIDI notes to access an extra high or low octave. In the diagrams accompanying this article, these extra octaves are represented by shaded areas at either end of the keyboard.

One note of warning: though I've used MIDI note numbers to specify instrument ranges, these have no correlation to absolute pitch. However, the note naming system used by Akai, Yamaha and Emu nominates MIDI note #60 as C3, and I've followed the convention of nominating C3 as Middle C. Apologies to Roland and Korg users, whose instruments use a different note-naming system!

Orchestral Assignment -- 'Live And Let Die'

To give you some idea of the practical applications of using orchestral samples, here's a brief description of an orchestral session I did in September this year. The job was unexpected, but came via my old friend Andy Duncan, a drummer/percussionist who also doubles as a session musician for Robbie Williams' producer Steve Power. The mission which Steve gave me (and yes, I chose to accept it) was to play keyboards and work out the orchestral parts for Geri Halliwell's cover of Wings' 'Live And Let Die' [*extra track on Geri's number 1 single 'Lift Me Up'-- Ed*].

In many ways this was a straightforward job, as the song is a known quantity, and a hit to boot. To make matters even easier, permission to cover the song was given only on condition that the original arrangement should not be altered (EMI Records A&R man Chris Briggs explained that this restriction applies to all Paul McCartney tunes, not so much for reasons of artistic vanity, but more as a safeguard against horribly unmusical cover versions). I had three days to work out the parts, program them into Andy's computer, and finally record them onto tape at Metropolis Studios.

The piano chords and bass line were easy to work out, though the tempo changes on Wings' original recording took a while to quantify (I doubt if they used a click track!). The orchestral parts (originally written by George Martin) were fairly clear, and I was able to notate the brass and string voicings without too much bother. In the middle instrumental section, the woodwinds play a series of stabbed chords over a repeated bass note of G, and a couple of their voicings were slightly hairy. In the main, however, they turned out to be simple major triads which meandered briefly into keys other than G. Nothing too revolutionary there, but it occurred to me that this sort of thing had now effectively vanished from pop records -- shame!

Working for celebs can be a little unnerving. There's always the worry that on meeting the artiste, one will blurt out something idiotic like "Harry Jellywell! Loved your work with All Saints" (or, as Alexei Sayle said of a putative meeting with Paul McCartney, "Go on, give me some of your money, you bastard"). In this instance, Geri Halliwell solved the problem by the simple ruse of not turning up (I believe she was in Spain on promotional duties, or perhaps sorting out the situation in Kosovo). Her absence posed one small but significant problem -- in what key should we record the backing track? There was only one thing for it -- someone would have to listen to Geri's solo album and work out her vocal range. After negotiating a small pay rise, I took on the job, and established that she could sing a low D (that's D2 on your general pitch guide), a pitch which falls beneath the range of most female vocalists. As the song starts with this note, it meant we could keep the song in its original key of G major and thereby maintain the flavour of George Martin's original voicings... which was nice.

By the end of the first day, I had virtually the whole arrangement written out on three sheets of 24-stave manuscript paper. A real orchestra was to be recorded later, but it was important to get the MIDI arrangement sounding as good as possible, not least because the vocal, guitar and bass had to be recorded before the orchestra. Finding the right combination of sounds turned out to take a lot longer than working out the parts. 'Live And Let Die' has some steaming heavy sections, and I had to use a fair bit of layering to get the requisite big sound. In the case of the brass, I had to use staccato attacks layered with loud sustained samples to get the right front on the notes, and by the time I'd layered up four programs or so, my Akai sampler was beginning to creak. The delay was not, as far as I could tell, caused by MIDI's serial protocol or a polyphony problem, but the result of the sampler having to output so many stereo samples at once that its internal processor began to slow down. Fortunately, Andy Duncan has two Akai S3000s, so when laying the sounds to tape we were able to put the attacks in one sampler and the sustains in the other, which fixed the timing problem. All the same, it made me wonder -- if a 32Mb machine can't cope with this type of dense layering, what can we expect from a 128 or 256Mb unit, where the temptation to pile on lots of parts will be so much greater?

Settling Scores

The session at Metropolis was very relaxed, and Steve Power turned out to be a nice, laid-back bloke. Andy Duncan had already programmed a rhythm track (quite an elaborate affair involving drum kit and orchestral

percussion samples, plus some cunningly chosen loops), to which I added programmed guide bass and real acoustic piano. The bulk of the session was spent recording the orchestral samples to tape, culminating at 2am with myself, now cross-eyed with fatigue, performing (as it were) staccato woodwind hits and piccolo runs. Steve Power had long since left the building, having established that Andy and myself appeared to know what we were doing.

As I could not devote more than three days to the job, I asked Steve Power to find me a collaborator to help turn my MIDI arrangement into a full orchestral score. Steve hired Chris Elliott, a composer and arranger who also plays keyboards with Radio Science Orchestra and The Pretenders. Being a Bachelor of Music, Chris can deal with the complexities of orchestral instrument transposition without screaming, and is experienced at working with orchestral players in recording situations. Once his musical knowledge was engaged, we were able to go through my working arrangement and very quickly turn it into a score for real players. Chris made some very valuable suggestions about the parts, playing styles and sizes of sections, after which he wrote out a new hand-written score. This was handed to a copyist, and within 24 hours, a set of orchestral parts had been generated. As I had originally played the MIDI arrangement into Emagic's *Logic Audio*, it occurred to me to use *Logic's* notation facility to generate an initial score, but for all the supposed convenience, I can guarantee it would have taken twice as long.

The orchestral parts for 'Live And Let Die' were recorded at Angel Studios, London on September 18th 1999. Line-up: 20 violins, eight violas, seven cellos, three double basses, three trumpets, two trombones, two bass trombones, and three French horns. The woodwinds are programmed!

Hans & Jeff's Symphonic Adventures

Once you've amassed a few dozen samplers, you need some sounds to put in them, and to this end Hans Zimmer decided to do a little serious sampling of his own. He flew to London with Jeff Rona, hired members of the London Symphony Orchestra and had them play their instruments one note at a time, both solo and in sections, at Air Lyndhurst Studios. According to Jeff, the results are better than anything currently on the market, but eat up huge amounts of sample memory. Rather than further deplete the world's stock of Akai samplers, Hans and Jeff are currently experimenting with Nemesys' *Gigasampler*, a program which turns a computer into a virtual sampler which can stream huge samples direct from hard disk [see review in *SOS December '98*]. Early reports are that the system works well, though it requires the host computer itself to have an inordinately large amount of RAM.

If you're wondering whether the fabled Air Lyndhurst orchestral samples will eventually turn up on CD-ROM, don't hold your breath -- a deal was struck with the players (and also the Musicians' Union) that the samples would only be used for demo purposes by Hans and Jeff.

ORCHESTRAL MANOEUVRES

Creating Orchestral Music With Sampled Instruments

Published in SOS March 1999

Technique : Composing/Arranging

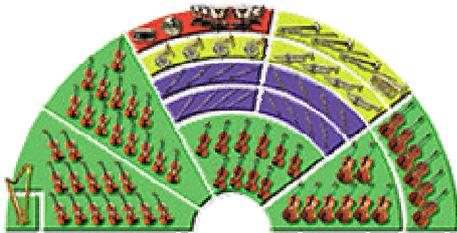
When it comes to emulating acoustic instruments, the modern orchestra probably represents the ultimate challenge. **Philip Meehan** shows you how to take it on and win.

Now I don't know about you, but for as long as I can remember there has always been a musical instrument that has been out of my humble reach. Back in the early '80s, it was (of course) a Fairlight CMI or NED Synclavier. Then, later on, it was something more esoteric and 'retro', such as an ARP Quadra, or an original Theremin. Nowadays, the one instrument I would dearly love to own more than any others is a full symphony orchestra -- even though it would require constant feeding, make a lot of mess and take up so much space...

Without wanting to start (another!) long-running SOS debate, I would claim that the modern orchestra is still hard to beat for power, style and versatility. Portishead, Björk, The Divine Comedy, Pulp and Puff Daddy all featured fairly heavy-duty orchestration on their last albums, and even those goaty metal stalwarts Metallica are currently writing and recording a 'symphony' for orchestra with film composer Michael Kamen. With the advent of several excellent sample libraries of orchestral instruments (such as those by Peter Siedlaczek and Miroslav Vitous) -- as well as half-decent acoustic presets on most keyboards -- it's now just about possible to capture some of the feel of having 80-plus talented musicians at your control, if you do a little groundwork first.



Seating P(I)an



The orchestra has developed a fairly standard seating arrangement over the last few centuries, whereby loud instruments are placed towards the back, quieter ones nearer the front and solo instruments generally in the middle. The left-to-right placement of instruments is crucial to achieve a good stereo balance, so that the overall soundfield is never left- or right-heavy during the performance. By emulating this layout with your sampler, you can make your own orchestra a thousand times more convincing, as well as saving on memory by using 'panned-mono' samples rather than stereo versions (they'll sit better in the mix, as well). Once positioned, adjust the levels for each section so they all sound about the same and start cranking up the reverb -- remember, more on the instruments at the back, less on those near the front.

Once you're reasonably happy with your layout, save it and -- here comes the important bit -- never touch it again! No matter how tempting it may be at some point to start EQing, panning or level-adjusting, *don't*. I'll explain why later, and no cheating, or I'll tell...

Happy Families

The orchestra can be divided into four main families of instruments: strings, brass, woodwind and percussion. No matter what the backlit LCD on your sampler may tell you, these are not instruments in themselves. A sample called 'Strings' is about as meaningful as a sample called 'Norman Cook' -- whilst it may give an impression of an orchestral string section, what you really want is a set of four different programs. Let's go through them properly.

The String family is made up of Violins, Violas, Cellos and Double Basses (more usually referred to as just 'Basses'). These instruments' parts are clearly defined in orchestral arrangements, with each section normally playing a monophonic (or occasionally duophonic) line. Playing a big, two-fisted chord part on your 'Strings' program may sound impressive but it is not at all accurate and -- more importantly -- you won't be able to hear any other instruments through it! If your sample library has these four instruments as separate programs, all well and good: otherwise, you can create them by taking your 'Strings' program and dividing it up by limiting the keyranges

to G3-C7 for a 'violins' program, C3-C6 for the 'violas', C2-A5 ('cellos') and E1-B3 ('basses'). Dividing up these instruments and assigning them different parts (and stereo positions) really will make your string arrangements sound better.

One problem with sampled strings is mimicking the different playing styles -- strings can either play smoothly from note to note (*legato*), or skip around in a 'Bittersweet Symphony' manner (*detaché* or *staccato*). One way of helping to reproduce these styles is to assign attack and release times to a mod wheel or other controller. By choosing samples which contain the attack portion of the bowed sound and then programming the mod wheel to range from 0-sec attack/0.5-sec release to 1-sec attack/2.5-sec release, you can use the mod wheel to vary the envelope as you play, smoothly flowing from *legato* to *staccato* with alarming aplomb.

Vibrato is also fairly important here, and simply assigning a 6-7Hz LFO to a single program called 'Strings' can result in a big, wobbly sound. Assigning slightly different vibrato rates to each of the four string sections, with deeper modulations on the violins and less on the basses, will make the strings sound much more lifelike, and sit better with the other instruments.



Another playing style that can cause problems is *pizzicato*. In this style, the instruments' strings are plucked rather than bowed, and although sampled *pizzicato* strings are universally quite realistic, there is a common problem. With the exception of the 'professional' sample libraries, most sample CDs and keyboards only have one *pizzicato* multisample. This is fine for most uses, but when the same note is played in quick succession, its digital roots are exposed and realism takes a back seat. All is not lost, however...

The best way to simulate a *pizzicato* passage is to swap between two slightly different multisamples, either at random or alternating with every note. If you only have the one program, you can 'fake up' a second by moving each root sample down a semitone or two and detuning them back up to the correct pitch. This will produce a very slight difference in the sound which will help massively when playing a *pizzicato* string piece. And it won't take up any extra sample memory either!

Arranging orchestral parts for strings is a lifelong pursuit, so in the meantime an old adage applies well here -- keep it simple. Listen to lots of good examples of well-arranged orchestral music for ideas and I guarantee you'll be surprised at just how simple the string parts in many of them are.

So Horny

The Brass family, like Strings, is made up of more than one instrument, namely Trumpets, Horns, Trombones and Tubas. Each of these instruments can sound quite different, unlike strings, where all four instruments are similar in tone, but differing in pitch. If you want to produce powerful, realistic-sounding brass parts for your arrangement, my advice would be to back off from the ubiquitous 'Trumpet' and 'Trombone' samples and make more use of 'French Horns'.

The French horn is probably the most versatile member of the brass family, with a playing range of F2-C5 and a total length of 17 feet (which is why it's all curled up like a garden hose). Unlike the trumpet and trombone, the French horn has a more 'generic' sound that is much easier to replicate with the sampler, especially when used in conjunction with a slickly-programmed filter. As with the strings example earlier, the key to achieving realistic brass performances lies in your mod wheel.

The dynamic range of most brass instruments is fairly huge, and french horns are no exception. They can go from soft to loud, mellow to brash in just one puff, and the best way to simulate this playing style is with a low-pass filter attached to the mod wheel. The exact filter frequencies will vary from sampler to sampler, but you want the filter to track from 'fully open' to 'hugely closed' at its zero point. That way, the mod wheel will filter sweep from very dull to extremely bright and, as with the strings, you can incorporate the mod sweeps into your playing style -- literally 'pushing' open each note by

"The modern orchestra layout has evolved over the centuries so that from the conductor's point of view (right in the middle) all the instruments are fairly well balanced."

hand in a way no filter envelope ever could. It may sound like an obvious trick, but with a little practice it's possible to produce astonishingly realistic results.

The same trick can be applied to the other instruments in the brass family and helps massively in simulating a brass section. A common giveaway with sampled orchestral work is that the brass section is all-pervading, fizzing and farting away with every note. Low-pass filtering each brass part by hand helps to separate out the different instruments, giving the arrangement much more room to 'breathe'.

The Answer My Friend...

The Woodwind family includes flute, clarinet, oboe, cor anglais and bassoon, as well as variants of these such as piccolo (high-pitched flute), alto flute (sometimes incorrectly called a 'bass flute'), bass clarinet and the deep, dark, mysterious contrabassoon.

Sampled versions of these instruments generally tend to be fairly accurate, but with one quite common flaw. Woodwinds are generally played by humans who, on the whole, only have the one pair of lungs. Putting aside the technique of 'circular breathing' (jointly developed by the Aborigine people and Rolf Harris), it is not possible to play a note on a woodwind instrument for more than several seconds without (a) being sick or (b) imploding. Therefore, it doesn't make an awful lot of sense to loop sampled woodwinds (unless you have a sampled woodwind section, who alternate their breathing-points to keep the note sustaining). So, if possible, edit your solo woodwind samples so they naturally tail off after about six or seven seconds and your arrangements will feel all the better for it. Trust me.

As with strings and brass, modulation is the key to realistic woodwind samples. With strings, we modulated the envelope and with brass, the filters, and now it's the turn of the LFO to have a go on the mod wheel. Woodwind instruments' most notable characteristic is their delicate use of vibrato and tremolo (and just to quickly clarify the difference, vibrato is a modulation in pitch and tremolo is a modulation in level).

Justa One Cornetto

If you thought that the phrase above was Italian for 'Solo Trumpet', the following may be of interest to you. Orchestral terminology is generally in Italian, and while most of it is only of relevance to classical composers and musicologists, some of it may be useful when working out what instrument it is you actually have a sample of:

- **Con legno:** ['with the wood'] An instruction to hit the strings with the back of the bow for a percussive effect.
- **Con sordino:** Muted strings (or brass).
- **Contrabass:** Another name for a double bass.
- **Crescendo:** Getting gradually louder.
- **Detaché:** A bowed string note in which the start and stop of the bowing can be clearly heard.
- **Diminuendo:** Getting gradually quieter.
- **English Horn:** An unnecessary translation of 'Cor Anglais' -- the alto version of the oboe.
- **ff:** [abbreviation of 'fortissimo'] Very loud.
- **f:** [abbreviation of 'forte'] Loud.
- **Glissando:** Sliding between notes.
- **Gran Cassa:** ['Big Drum']. Bass drum.
- **Legato:** Playing smoothly, from one note to another (the opposite of staccato).
- **Marcato:** ['Marked'] Emphasising each note played.
- **mf:** [abbreviation of 'mezzoforte'] Medium-loud. (Caution: has different meaning to The Artist Formerly Known As Prince!)
- **Orchestra bells:** Glockenspiel.
- **p:** [abbreviation of 'piano'] Soft.
- **pp:** [abbreviation of 'pianissimo'] Very soft.
- **Piatti:** ['Plates'] Cymbals.
- **Pizzicato:** Plucking string instruments with the fingers.
- **Spiccato:** 'Bouncing' the bow off the string to create a short, sharp note.
- **Staccato:** Playing short, clipped notes (the opposite of legato).
- **Tamburo Grande:** Bass drum, again.
- **Tam-tam:** Gong.
- **Timpani:** Kettle drums.
- **Tutti:** Everything playing together. The proper term for that classic '80s 'Orch. Hit' sample!
- **Violoncello:** Proper long form of 'cello.

Vibrato is most effective on the oboe, cor anglais, clarinet and bassoon, whilst tremolo sounds more natural with flute samples (which are blown across, rather than blown into). With solo woodwinds, program the mod wheel to control the frequency of the sine or triangle LFO, sweeping it from around 3.5Hz to about 6Hz, whilst simultaneously adjusting the pitch-modulation depth from zero to around 10 cents (in the case of a flute, you want to modulate the level, by about 5dB or so).

Then, once again, play the mod wheel as you play the woodwind samples, bringing the vibrato/tremolo in and out on every note. When building up a woodwind arrangement, the subtle differences in modulation speed and depth on every instrument will really help to bring the arrangement to life. (By the way, here's a quick tip: when programming vibrato and tremolo, make sure the instrument in question has got reverb on it. It's hard to get realistic-sounding modulation on a 'dry' instrument, since it's the effect the modulation has on the reverb that is the most important.)

Percussion Sections Of Distinction

The Percussion family is essentially the 'Waltons' of the orchestra, comprising a large range of assorted instruments, and is often referred to by orchestral people as 'the kitchen'. The set of instruments most often found lurking at the back are the timpani (or 'kettle drums'), cymbals, bass drum, snare drum, triangle, tambourine, glockenspiel (or 'orchestra bells'), xylophone, tambourine, tubular bells and gong (or 'tam-tam'). By the way, did you know that the weird, quasi-choral, moaning effect throughout the soundtrack to the 'Alien' films is actually a gong being slowly stroked with a gobstopper?

If there's a secret to making sampled orchestral percussion sound realistic, it's probably contained in the phrase 'less is more'. When you've first loaded up some percussion samples, it's all too easy to bung on lots of reverb and crash away to your heart's content. Once you've got that out of your system, however, it's time to get to work properly.

Orchestral cymbals, for example, are treated very differently to conventional cymbals. Contrary to popular belief, they are not usually crashed together (since that invariably sounds like a trolley collision in *Casualty*) but are instead 'swept' together and then muted on the player's body. Therefore, sampled orchestral cymbals should have a slight attack time at the start and a fairly short release time (less than a second). If these samples are played slightly ahead of the note, they give a much more realistic sound than a simple 'crash' played dead on the beat. By changing the length of time for which you hold down the key before releasing it, you can also modulate the decay time (unlike having a simple triggered cymbal sample with a fixed decay time). Bear in mind, however, that if the tempo of the sequence is changed, the cymbals will need to be moved slightly earlier or later to pull them back into sync.

Timpani can also benefit from the same treatment. While individual timpani strokes are good for underpinning

and emphasising passages -- by essentially forming a bass line -- timpani rolls are even better at emphasising crescendos, by starting a bar or two ahead and leading up to it. A useful keyboard setup would duplicate the timpani samples that normally occupy the first few octaves of a keyboard on the top few octaves as well, so the same sample, for example, is present on C2 and C5. That way, timpani rolls can be played using both hands a few feet apart, which is much easier than trying to 'roll' with both hands on a single key.

Orchestral music can use a lot of fast snare rolls, which can be difficult to emulate and even more difficult to sequence. Repeating the same sample very fast is not a convincing option, since you invariably sway off into drum 'n' bass territory -- not necessarily a bad thing but, nonetheless, not what's required here. A better solution is to either find an orchestral drum-roll sample and create a continuous loop, or manufacture one by adding continuous filtered white noise to a single snare hit. If you place the looped drum roll/white noise on C# and the single hit on D#, for example, it's possible to play some extremely realistic orchestral snare patterns which, unlike more conventional drum loops, do not wander out of time when the sequence tempo is changed. Don't be timid with the reverb, either -- remember, these instruments are right at the back of the hall, and the key to realistic percussion is to create a good 'off-mic' sound. Which brings us neatly to the next section: mixing.

"Creating a convincing orchestral sound using just samples owes more to the way those sounds are put together and treated in the composition than it does to the samples themselves."

Hands Off Control

As mentioned earlier, the modern orchestra layout has evolved over centuries so that from the conductor's point of view (right in the middle at the front) all the instruments are fairly well balanced. It is his job to then keep time with his baton, emphasise certain passages and adjust the various levels of each section to create a good overall effect. I've always found it amusing that classical people think that mixing modern dance music just involves 'wiggling a few faders', while a

lot of contemporary producers think that conductors 'just wave their arms around'. Fact is, Sir Georg Solti and Goldie both do the same job and I, for one, would like to see them swap.

When simulating an orchestra with samplers, the reason for keeping away from the normal armoury of EQ, panning, FX processing and level-adjusting is that none of these processes exist with a live orchestra -- but they all have a direct parallel in the world of arrangement. The basic rule is simple: if a particular instrument sounds too quiet, don't reach for a fader -- play it louder! Below is a list of common mixing processes and how best to emulate them in arrangement:

•Faders: with an orchestra, the only level

control each instrument has is for the performer to play it louder or quieter. In a live situation, there really isn't anything in the way of foldback, so each performer looks to the conductor to see how their part sounds 'in the mix'. When orchestrating using samplers, experiment by adding together different instruments to boost volume -- double up a violin line with violas, or a horn part with trombones. Woodwinds are useful here -- bass clarinets will help to emphasise cellos, whilst the contrabassoon will help to bring forward bass parts.

•EQ: now this is where things get interesting. While most individual players can subtly affect their tone on an instrument-by-instrument basis, arrangement is the key to a good-sounding orchestral piece. Just as EQ can help to make different instruments 'sit' well in a mix, so arrangement can be used to create a convincing overall orchestral sound.

If a melody line is getting lost in the mix, it can be 'brightened' by being doubled with the same line an octave higher (or 'deepened' by being doubled an octave lower). Basses, trombones and timpani can all be used to enhance the bass end, while combining instruments such as violins and flutes can help to lift a section out of the mix. Tambourines can add top-end sparkle to a section, and gentle bass-drum rolls can be used to fill out the bottom end.

•Enhancer: there are orchestral equivalents to using an enhancer in a mix. If a melody line sounds a little 'muddy', adding a glockenspiel or harp part can act just like an Aphex, giving the line a more prominent attack. Likewise, if a rhythm is getting lost, a xylophone can be used to cut through the mix. Another secret weapon is the humble triangle. Although it's a quiet instrument, adding a looped triangle trill to a section really emphasises the high frequencies and, when used with a low timpani roll at the same time, can give a massive orchestral feel!

•Boom Box: if the bass end of the piece needs a little more punch, try emphasising the rhythm with plucked pizzicato basses -- in a real orchestral environment, this sound alone can loosen your ribcage. For big moments, the bass drum can be (sparingly) used to wake people up.

•Compressor: the dynamic range of an orchestra -- real or sampled -- can be immense. To make loud passages leap out without hitting the end stops, don't add instruments; instead take them away in the preceding passage, one instrument at a time, before bringing them all back at once. In good orchestral arrangements it's the 'gaps' before the loud sections that make the crashes seem loud, not the crashes themselves!

Final Scores

I hope that you now have more of an insight into the world of orchestral arranging. Creating a convincing orchestral sound using just samples owes more to the way those sounds are put together and treated in the composition than it does to the samples themselves. Naturally, if you start out with an excellent orchestral sample library (and gigabytes of RAM!) you'll create a more realistic sound, but you may be surprised at just how good an orchestral sound you can achieve simply by observing a few simple ground rules.

Personally, I see no 'moral' issues with writing orchestral music using electronic instruments. Gustav Mahler described the term 'symphony' as '...creating a world with all the technical means available.' By encouraging people to write and arrange music that includes orchestral instrumentation, we're all helping to keep the spirit of orchestras alive (and orchestral musicians in work!). I, for one, would like to have all my pieces performed by a real symphony orchestra in a beautiful-sounding hall, but it's a little out of my price range at the moment.

Still, you've got to start somewhere, and these orchestras will have to have something new to play in the next millennium... so let's get scoring.

20 TIPS

20 Tips On... Songwriting

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Technique : Composing/Arranging

Every songwriter goes through times when the inspiration just seems to dry up, and the perspiration doesn't seem to be working. **Debbie Poyser** offers some guidance.

Songwriting is a skill that is rarely taught: musicians more often than not tend to write instinctively, absorbing their ideas about form and structure from the music that's around them, and relying on inspiration for their melodic and lyrical direction. For many this works perfectly well, but there's no harm at all in trying to make a good thing better. You can improve your craft as a songwriter relatively easily if you accept that your work isn't just the result of some mystical process over which you have no control: certainly you need some talent to begin with, but you can hone your songwriting skills just as you can work on your playing or mixing skills. Here are a handful of simple ideas to get you thinking about how you write, and, if you're stuck in a musical rut, perhaps to help get you out of it.



1. If you've already got a chord sequence you're happy with for part of a song but are struggling with where to go next, try reversing the chord order of the part you already have and using it for the new part. It often works, but if it doesn't, try reversing just a section of the chord sequence and repeating it. Also, try doubling the length of time for which each chord plays and see where that takes you. For a bit of variation, halving note values for a chorus creates the impression of an increase in tempo even if there isn't one.

2. If you always write with a keyboard, pick up a guitar for a change and see if that sets you off in a different direction. Get a capo and put it in a stupid place on the neck - really high up, for example - and see how different that makes chords sound. Even the most basic chords take on a new resonance and generate new harmonics which your ear can pick up, maybe giving you an idea for a melody. Conversely, if you always write with a guitar, make a point of sitting down at a keyboard with a piano sound and picking out interesting tunes that wouldn't normally occur to you. You could even consider writing the verse music at the keyboard and swapping to a guitar for the chorus.

3. Keep a list of prospective song titles on your wall. Whenever you hear a good word or an evocative phrase, add it to your list to use when you're trying to come up with new material.

4. Try a different time signature for a change. If you never use 3/4, for example, try and write a song in 3/4. To vary your rhythmic range, try strumming a guitar along to a selection of records, just trying to extract their rhythmic feel in a natural way.

5. Listen to as many of other peoples' songs as you can. Focus especially on those songwriters whose works are considered classics, and don't neglect the best of what's happening now. Always be thinking about what makes a classic song so good while you're listening to it. Try to pick up on arranging tricks and song structures, and remember them; even make a note of any you particularly like. This isn't stealing -- it's studying. Film makers have been doing it for years and make no secret of the fact.

6. Analyse your favourite songs and construct exercises around them -- writing a new set of lyrics for a favourite song, for example, or setting the existing lyrics to a new melody. Write a theme song for a film that doesn't have one, or an alternative theme for a film that does. Listen to a classic song in a genre you don't usually work in and try to write a song which copies its style (but not its content).

7. Always carry a notebook when you're out, so that you can jot down any song ideas that occur while you're going about your daily business.

8. If you usually write songs with a lot of chords in them, try restricting yourself to just three and see what you can squeeze out of a limited set of options. Conversely, if your songs never have more than three chords in them, try writing one with six.

9. Try 'free association' when you have something to write a song about but can't think how to start the lyrics: sit down with paper and pen (or a word processor) and write down every word and feeling that comes into your head about that subject: the process can give you a push in the right direction, and the resulting words are the ones that you'll need to work in if the song is to make a genuine impression on the listener.

10. Though some people find it hard to construct lyrics that rhyme, rhyming *is* important and is worth persevering with. As highly successful songwriter Janis Ian says in *The Songwriters Workshop*, "A rhyme scheme helps to hypnotise, to force its way into our listening selves." Others have observed that a good rhyme scheme gives the listener a pleasant feeling of resolution and security. Not every song has to rhyme, but so many of the good ones do that there must be *something* in it! Don't overdo it, though -- a bad or over-extended rhyme scheme can be irritating to the listener and can distract attention from what you're trying to say. If you have to make a line sound stupid in order for it to rhyme, throw it away and start again.

11. To help with the above, get a rhyming dictionary. This will save you from mentally running through the entire alphabet one letter at a time trying to find a rhyme for 'existential'. A thesaurus, which will give you a list of different words that mean the same thing, is also a good resource for a songwriter and could help you add more interest to your lyrics.

12. Add extra professionalism to a song with sophisticated background vocal ideas. Don't always slavishly imitate the lead vocal's phrasing and timing. Try extending the end of the odd line in a harmony, then pick up with the lead again when it feels natural and musical to do so. When your lead vocal is singing a long held note, look for something short and contrapuntal you can do with the harmony vocals -- with clever phrasing you can fit an entire line of a song as a harmony line under the last extended syllable of a lead melody. This is one area where arranging and songwriting are very closely linked.

13. Get some books to help you. There are several excellent ones around that will really make you think and tell you things you didn't know. Books I would certainly recommend include the following, which are all available from the SOS Bookshop (01954 789888): *88 Songwriting Wrongs and How to Right Them*, by Pat & Pete Luboff (order code B254, £11.95); *Beginning Songwriter's Answer Book*, by Paul Zollo (B253, £10.95); *The Songwriter's Workshop*, edited by Harvey Rachlin and with an excellent chapter by Janis Ian and two cassettes (B260, £15.95); and if you really want an in-depth reading course on lyric-writing, leaning heavily on training your mind and knowing your own thinking patterns as a way to write more effective songs, check out *The Songwriter's Idea Book*, by Sheila Davis (B250, £12.99). If I was going to buy just one of the above, it would probably be *88 Songwriting Wrongs and How to Right Them*, for its straightforward presentation and language. (All the above prices will need postage added to them, by the way -- check the SOS mail order pages on page 276 for details.)

14. Decide where you're going to keep your songwriting notes and keep them there. You don't want to blow a potential gem because you can't find the scrap of paper you wrote it down on. Use a notebook, which you always keep in the same place, or get a folder for loose notes. If you use a folder, keep a pen and some plain paper in it too, so you can always lay your hands on these as soon as inspiration strikes.

15. If you compose with a sequencer, always have it in record mode while you're doodling at your keyboard. Don't assume that you'll automatically remember anything good that comes up, because you won't. As it happens, the latest versions of many popular MIDI sequencing programs actually have a buffer that captures your ideas for you -- if you find that you've just played something that you wish you'd recorded, press a key combination (Option Record in *Cubase*) places the buffer's contents in a track (incidentally, the next update of *Cubase* will provide a menu item for this feature).

"You can improve your craft as a songwriter relatively easily if you accept that your work isn't just the result of some mystical process over which you have no control."

16. Every songwriter should know that a commercial song has to have a hook. But did you know that it should ideally have *several* hooks? As well as your main lyrical/musical hook, the high point of the song, try to work in secondary hooks to maintain listener interest -- short guitar, bass or piano riffs between lines of the song, a catchy extra chord change when nothing is happening with the lead vocal or to lead from the verse into the chorus, or perhaps a vocal ad-lib that will stay in the mind of the listener. If you think about these things while you're actually writing the song, when you come to demo it you'll find you've already got a head start for its arrangement.

17. Try to introduce plenty of dynamic and metric interest into your songs, so that they peak and subside rather than plodding along on one level. If a song's verse has lots of short words in a choppy rhythm, try using long, sustained notes for the chorus, for example. Try to make sure that the verse and chorus are not the same length

-- vary short and long sections if you can, so that the song's structure does not become too predictable to the listener.

18. Make sure your songs are not all in the same key. It may sound obvious, but it's very easy to just stick with what's easiest for you to write or sing in, and if you don't keep an eye on this your songs could all end up sounding similar to each other.

19. Consider co-writing. Someone else's strengths can fill in for your weaknesses and they can bring unusual melodic or lyrical perspectives that would never have occurred to you.

20. If you've really run out of musical ideas, use technology. Those with computers can try an algorithmic composition or auto-accompaniment software package -- or even an arpeggiator! David Zicarelli's *M*, the king of interactive composition software, has just been re-released (for the Mac only) and can treat your musical input to predictable or totally weird transformations (www.cycling74.com/products/m.html). PG Systems' *Band In A Box* is available for various computer platforms, and lets you apply a wide variety of preset styles to whatever chord sequence you input, taking a lot of the strain out of song construction. Even Steinberg's sophisticated *Cubase* family of sequencing software has a so-called Style Tracks module, and similar facilities are found on many a sequencer-equipped synth.

MAKING ARRANGEMENTS

A Rough Guide To Song Construction And Arrangement: Part 1

Published in SOS October 1997

Technique : Composing/Arranging

PART 1: Great songs are 1% inspiration and 99% perspiration. BIG GEORGE mops his brow and takes it to the bridge...

Over the next couple of months we'll be looking into the most scant-regarded and often-ignored element of music: arrangement. It's a massive subject which has umpteen rules, all of which can be bent, broken and rewritten. For the purpose of this series of articles we will not be looking into how a guitar/bass/drum group get their live set together (for a detailed look at those aspects of arrangement and general musical preparation, I suggest you take a peek at *SOS's* sister magazine *Sound On Stage*).

So just how do you go about arranging a tune? The answer to that question has as many connotations as the age-old conundrum: how long is a piece of string? On the assumption that the string is two metres in length and seven strands thick, I intend to look at the long and short of arrangement for any sound that calls itself modern popular music.

WHAT IT'S NOT

Let's start by looking at what arrangement isn't:

- It's not finding a chord sequence for a song (although it often is changing the pattern of a chord sequence to make a more sympathetic harmonic bed).
- It's not writing the lyrics to a song (although it can be working out exactly what the backing singers will be doing with themselves).
- It's not deciding what the rhythm to a track is (although, in truth, it sometimes is).

Actually, the line between composing or producing a tune and arranging it is a very thin one. If you're either the producer or the composer, arrangement goes with the territory, whereas if you're being brought in by a composer or producer specifically as an arranger, it's usually to arrange the strings or the horns or the backing vocals (we'll examine those particular aspects and what the job pays later in the series). For now, we'll look at the basics of how to get the best out of a song you've written.

The first thing you must do is make sure that there's a reason for every part to be there -- that goes for any piece of music you write. The amount of times people include four bars of nothing between sections (because it's always been there) is equal to the amount of songs that never have a hope of getting anywhere. If you're writing a piece of art that you hope will turn on millions of people, make sure that every part has a reason and nothing is missing. That's the art of writing, arranging and producing hits. Everyone knows what ingredients can be used -- it's all down to the stirring, I guess. Aprons on: let's cook!

THE INGREDIENTS

THE VERSE: We all know that a verse is the part of the song which tells the story. Most songs have no more than four verses, which would include repeating the first verse at the end. Bob Dylan has written songs with dozens of verses, but none of those ever became hits. Of course, you can get away with only one verse repeated over and over again, if you want. The Red Hot Chilli Peppers, with 'Roller Coaster of Love', and Nirvana, with 'Something in the Way', are two that did.

THE CHORUS: The chorus is the part of the song which you want people to be singing along with by the end of the song -- the first time they hear it. One easy, effective and sure-fire killer way of making a chorus lift to maximum hit-ability is to find the highest root note string sound you can and have it simply playing all the way through. It sounds corny, but just try it. It could be one of the elements that makes your track a worldwide smash hit. Ask the Pet Shop Boys what they think of this idea.

THE BRIDGE OR TAG: This is a section that links the verse and the chorus together. That music shop favourite 'Wonderwall', by the mighty Oasis, has a perfect example of a bridge, if a little long and unadventurously used ("And all the roads we have to walk are winding..."). The song also has the 'two verses at the beginning' trick (see next section).

THE MIDDLE EIGHT (or, as James Brown would shout, "Take it to the bridge") is a third melodic part, usually placed after the second chorus to break up the song pattern. It's called a middle eight because it's usually eight bars long, but there's no law saying it has to be that length or even there in the first place -- whatever feels good and fits the bill. No-one has ever done a study on this but I would hazard a guess that 50% of records have a middle eight, and of those, 50% are eight bars long. Michael Jackson used this device for effect in 'Billie Jean' ("People always told me, be careful what you do..." -- which, by the way, is eight bars long).

A KEY CHANGE: Why? Because it can lift a song at that difficult 'two-thirds of the way through' stage, where the listener's interest is beginning to waver. The usual key change is to move up a tone (from A to B, for example). It's advised, for maximum effect, to build into this with a huge drum break or a dramatic pause. Key changes down are seldom, if ever, used, because they give the opposite effect of uplift. And note that more than one key change per song can be more annoying than exciting. There's a classic example of a key change in the Whitney Houston hit 'I Will Always Love You'.

THE CODA is a cool way of ending a track. It's either the chorus hook repeated continuously, or a new section used to tail off a track. One of the most exciting codas used in popular music is the end of Elvis Costello's 'Accidents Will Happen' -- the bit that repeats the words "I Know", *ad infinitum*.

Of course, 'Bohemian Rhapsody' doesn't fit the patterns explained here, but all but a handful of the tens of thousands of top ten hit records before and since have.

PIECING IT TOGETHER

Let's assume that your song has the following conventional structure:

Verse 1

Chorus

Verse 2

Chorus

Verse 3

Chorus

Verse 4

Double chorus

End

How do you make it more interesting?

- The first thing to add is an intro. It could simply be a vamp of the opening couple of bars of the verse or the final four or eight bars of the chorus. Then again, four bars of drums at the beginning of a song never goes down badly either.
- Try getting rid of the first chorus by sticking verse 1 and verse 2 together.
- Then, after verse three, double up the chorus, drop the last verse down a gear and make it a middle eight. Halving the rhythm track or changing the fourth chord to a minor second chord is a good way of going about this.
- A middle eight section is a great way to set up the final chorus onslaught (see 'The Nashville Number System' box).

TEMPO

Beats per minute (BPM) first became a science in the mid '70s, when various producers using early sequencers to make dance music worked out that 137bpm was the optimum speed to excite the human heart rate whilst dancing (137 -- the disco heaven). Since then sequencers have become an awful lot more sophisticated, as has the BPM awareness of the music makers. These days there are more pigeonholes in which to place music than ever before: house and garage tracks tend to fall between 130-145bpm, jungle in the 165-170bpm bracket, and happy hardcore between 170 and 175bpm, but all bpm's are subject to change on the whim of a single track, which could be yours. There are some styles of modern dance music which have very eclectic tempo constraints: techno can go from an industrially moody 80bpm to a brain-smashingly bizarre 500bpm. If you're thinking about trying something in a new style for you, do some homework first. Dance music is an exact business, and close scrutiny of the current market leaders is essential to understanding the form and arrangement. A visit to your friendly local specialist record shop with £20 in your pocket will give you the best overview of what is the current norm. And in dance music, being current is everything.

Even if you're not a dance music expert and have no intention of dipping your toe in that particular beat pool, tempo is still an issue. A couple of tricks that are seldom used these days, but were common practice up until the Linn drum came onto the scene, involved speeding up the track, both gradually and as a whole.

Tracks would speed up naturally during the recording of the backing track, which is something that doesn't happen these days. If you use a sequencer but don't use loops, try notching up the BPM of your track every verse and chorus. Starting at 120bpm and ending the track at 125bpm can give a sense of urgency without the listener having the faintest clue what's going on.

The other way of speeding up a track which used to be used on a very regular basis was to slow down the mastering tape machine by a factor of 8.5% at the final mix stage. When played back at normal speed, the finished master would be slightly over a semitone higher in pitch. The reason for this was that it made the playing sound a bit tighter, particularly the drums, and gave the overall sound a bit of a tippy edge. On the downside, it made working out songs from the record difficult, because they were often slightly out of tune.

CODA

It may seem that some of the aspects we've covered have strayed into production or composing, but as I mentioned at the beginning, the line is a fine one. Next month we'll look at instrumental arranging, including adding horn and string parts, both sampled and real, basslines, rhythm structures, and fancy arrangement tips.

ANATOMY OF A HIT: THE BEACH BOYS' 'GOOD VIBRATIONS'

Each month, I'll take a look at the arrangement of a well-known record to see what makes it tick. To start with, let's consider 'Good Vibrations', recently voted the greatest single of all time by the readers of *Mojo* magazine.

This record is more than a mere classic, it's the Holy Grail of pop. Recording commenced mid-February 1966 at Gold Star Studios in Hollywood, towards the tail-end of sessions for The Beach Boys' most influential album *Pet Sounds* (although ultimately, it was not included on that album). After a shaky and uncertain start, it took six weeks of recording time, spaced out over several months, to complete the track. Moving the session between five different studios, bouncing from a 4-track machine to a stereo mix on one of the early 8-track machines, and slicing multitrack tape as he went, Brian Wilson, the Beach Boys' founder, producer and principal composer, gave 'Good Vibrations' a godlike sound.

On the finished record, 'Good Vibrations' is in the key of G flat major (six flats) and starts with the verse descending from the relative minor: E flat minor. It was probably played in the key of F (one flat) with the verse starting on the chord of D minor and sped up at the mixdown stage. Typical pop songs of that era (or indeed any era) usually have a basic groove running throughout the track which doesn't change a great deal from start to finish. Not so 'Good Vibrations'; this is, in Brian Wilson's words, a 'pocket symphony'. It lasts just over three and half minutes but has as many dramatic changes in mood as a piece of serious classical music lasting more than half an hour, moving from the delicate opening verse (bass, vocals, and organ only) to the soaring vocal harmony sections on the chorus and bridge, and then, in the middle of the track, dropping right down to the simplicity of a church organ pad accompanied solely by a tambourine. Of course, much of the atypical structure is due to the way the track was recorded in completely different-sounding sections, and then edited together later.

As well as the unconventional structure, the instrumentation used is, to say the least, dangerously exotic. This was a period when pop records were either guitar, bass and drum combos or traditional orchestrated arrangements for vocalists. For one thing, 'Good Vibrations' doesn't use a guitar; instead it uses a solo cello and a theremin to build the rhythm section for one section, and in another section doubles a honky-tonk piano with a jaw's harp. The instrumentation changes radically from section to section; the bass plays in some parts but not in others, drums and vocals drop in and

out, and the voices sometimes accompany fully developed backing tracks (such as in the chorus) and are in parts almost a *cappella*.

The beat, although the standard four-in-the bar, has a triplet feel (1 2 3 / 2 2 3 / 3 2 3 / 4 2 3) -- some people call it 'threes over fours', others 'a shuffle beat'. This is the same feel as Tears For Fears' 'Everybody Wants To Rule The World' and Billy Ocean's 'When The Going Gets Tough' and many other lesser number one records. For the casual listener, the most prominent triplet figure is the part played by the cello, which saws away on the root note of the chord during the chorus.

The very first thing you hear is the angelic voice of Carl Wilson, Brian's brother, singing the word 'I' a triplet quaver before the downbeat. The first eight bars of the verse feature a heavily phased organ passed through a Leslie rotary speaker (for more on this, see the Hammond feature starting on page 40 this month). The organ plays the chords on the beat, accompanied solely by the tight bass guitar sound of Motown and Country music session giant Carole Kaye playing super-cool triplet figures. The second eight bars have a broken but rigid drum pattern played by session drummer extraordinaire Hal Blaine (alleged to have played on more hit records than any other musician ever) in tandem with a tambourine splash and a counterpoint descending French horn laid beautifully in the distance.

The 16-bar chorus was edited into the multitrack master tape at some point during the construction of the track. Like all the other edits that made up the finished record, this one is partially masked by vast reverb decays added at the mixing and sub-mixing stages. Rhythmically, the chorus is stable, but instrumentally it's wild; the throbbing cello is stretched over a straight bass and drum framework accompanied by a back-beat tambourine, and the whole arrangement is topped off by a gentleman called Paul Tanner playing a theremin -- most unusual for pop music of the time.

The chorus vocals are split into four 4-bar sections. The first section is the 'I'm picking up Good Vibrations' hook line, the second section adds an 'oo bop bop' figure (years before those Hanson boys were a twinkle in their parents eyes), the third section adds a gorgeous high harmony to the 'oo bop bop' part and the fourth section adds an even higher harmony. The structure of these vocal parts and their harmonic framework may not be the kind taught in the Royal Academy of Music, but the excitement they generate in the listener is equal to anything scratched on a piece of parchment by a long-dead composer.

A common way to develop a song arrangement is to add something to the second verse. Again, 'Good Vibrations' deviates from the norm; the second verse and chorus adhere to exactly the same patterns of instrumentation and harmony as the first time through, and the verse section is never repeated again in the song. Furthermore, the song then moves into a section that is completely out of left field; a honky-tonk piano plays with half-time feel accompanied by an on-beat bass drone, a different tambourine (shaken, not hit), a jaws harp, and more theremin low in the mix. After eight bars, there's a four-bar vocal crescendo ('aaaah'); the third and fourth bars vocally counterpointed with an angelic 'Oo my my my', which takes us into the middle eight.

Musically, the middle eight changes from the relative minor to an E flat major and instrumentally adds a sleigh bell. The vocal arrangement ('I don't know where but she sends me there...') has four separate parts which interweave so divinely the Spice Girls or Boyzone couldn't even dream them properly.

From a half-time middle eight, most people would go straight into a big splash hook-line section. Brian Wilson decided to slow the track even further, moving into a 23-bar section of church organ and tambourine by means of the most savage edit in the track. Most arrangers would steer clear of this kind of drop in pace, on the grounds that it would be chart suicide, but not Brian. This section is split into six sections of four bars (my maths is fine, just give me time to explain). The first section is vocal-less. The second section adds the line 'gotta keep those loving Good Vibrations happening with her' and at the end Carole Kaye's fat, round bass strikes up, leading into the third section which has blissful vocal harmonies and a bass line. The fourth section adds a harmonica and over the course of these four bars all the vocals fade out (again, an unconventional move). The next section is vocal-less, with just the church organ, tambourine, bass root and harmonica, as is the first two bars of the sixth and last section. On the third bar there's a crescendo vocal 'aaaah' which stops with everything else on the down beat of the last bar, decaying with delicious, distorted, ultra-analogue spring reverb to near-silence, before the next surprise: an eight-bar coda of 'Good good good, good Vibrations'. This time, there's no 'Oo bop bop' vocal accompaniment, just straight root-third and fifth block harmony, but once again, all these vocals fade out in time for the final two bars of the section, leaving the cello and bass prominent before the final piece of singing on the track: eight bars of rapturous barber shop-type vocal harmonies. There are no words, just 'dos', 'bas' and 'oos'. As if this wasn't unexpected enough, the final payout is then heralded by two bars of just cello and very prominent theremin before the drums and bass kick in for the final two-bar fade-out with full instrumentation. The exotic instruments, the complex vocal arrangements, and the many dynamic crescendos and decrescendos all combine to set this record apart from most pop music. In short, if there's an instruction manual for writing and arranging pop songs, this one breaks every rule.

MANIPULATING YER DIGITS

I'm working on the assumption that you're not a classically trained pianist or a gifted jazz ivory-tickler, and that you input your musical information through that new-fangled MIDI thing, by means of a keyboard. Here's a handy chord-playing tip. In short, instead of having one chord shape that moves up and down the keyboard, never changing, try using different inversions. If the chords you play are (C) (F) (G), rather than playing the notes in the order C E G / F A C / G B D, where the fifth note of the chord stays in the same position, try playing C E G / C F A / B D G.

To create a mere interesting bassline, use notes from within the chord other than the root. You'll be playing like Liberace before you know it. (For chords with more than three notes, see 'Posh Chords' box).

THE NASHVILLE NUMBER SYSTEM

In the last decade of the 18th Century, the centre of the music world was Salzburg, Austria. Two hundred years later there is no more productive music city on the planet than Nashville, Tennessee. Whether you like country music or think it's a pile of twanging nonsense, the fact remains that there are more studios, producers, arrangers, composers and musicians making music every day in a square mile there than anywhere else on earth.

Though this is more to do with songwriting than arranging, there's a most remarkable thing about the way that music is made there, which can be of great benefit to musicians of all tastes: instead of musical notation and chord progressions, they use something known as the number system. Numbering the notes of the scale from one to eight (the latter being an octave higher) and applying those numbers to chords means that a song is seen as a numbered pattern of chord changes, regardless of what key the song is in. It may seem an odd way of looking at music, but don't knock it until you've tried it -- whatever flavour of music you deal in. It makes learning new songs easier, changing the key to a song a doddle, and understanding what makes other great songs flow so well more straightforward. It would be completely out of order of me to suggest that looking at a number of great songs by other artists as a set of chord numbers, and picking the bits you want to use as a blueprint for your own song in your own comfortable key is a good way to start a new song. If only because this article is about arranging and not songwriting.

Anyway, every musical key is numbered in the table below. A number on its own signifies a major chord; in the key of C, a 1 is read as C major. Other "flavours" of chord are created by a simple shorthand; for example, if you want a Bb minor in the key of C, a minor chord based on the flattened seventh degree of the scale, it would be written as b7-. Nashville convention implies a particular kind of chord for each step of the scale, although this is always fully notated to avoid ambiguity:

1 = major

2 = minor 7th (2-7)

3 = minor 7th (3-7)

4 = major

5 = major

6 = minor (6-)

7 = 7th (7/7th)

So while the 6 chord would normally be minor (notated as 6-), you might want it to be a major or major 7th (6 or 6/7th). And remember, changing a chord from major to minor and vice-versa could make the difference between a massive hit and just another song.

Incidentally, the 6- chord is the relative minor of the key. (In the key of C it would be A minor.) Which means that the same notes are used in the relative minor key of A minor as are used in the major key of C. This may not seem that interesting, but if you use it in the correct way it can make you as rich as Eric Clapton. (Eric Clapton has based his entire guitar-playing style on exclusively using relative minor scales, and he's not the only one, by a long shot.)

MAKING ARRANGEMENTS

A Rough Guide To Song Construction And Arrangement: Part 2

Published in SOS November 1997

Technique : Composing/Arranging

PART 2: BIG GEORGE looks at arranging for strings, brass and horns.

Last month we looked at various ways to lay out a song; this month we're going to explore a couple of different ways to colour up a track. Even if your particular musical bent is 'Hardcore Techno Massive', acknowledging no known boundaries to the sonic experience of the recording process, there's still maybe something for you to glean from the next couple of pages. If you make music that is more to do with mainstream daytime radio play, there definitely is.

There's an old saying that 'you can't polish a turd', although there are plenty of ex-Number One acts who spend months trying to shine up their latest, unremarkable albums -- the only thing dazzling about the end result they produce, however, is the cost of the video special effects to promote these pieces of musical irrelevance.

NEXT NEXT NEXT

In the hands of an expert, or someone with 'that certain touch', the addition of musical colour can raise a track to hitherto unimagined levels of orgasmic audible pleasure. In the hands of a lazy or careless expert, however, or someone who merely thinks they have 'the touch', adding strings and/or horns can drown a track in a sea of ill conceived, over-busy, self indulgent nonsense.

You, as the arranger, are the judge of what is the right amount of fairy dusted gloss to put on, but the listening (and more importantly, buying) public will always be the jury. But thankfully, it is possible to fool some of the people all of the time!

Adding strings or horns to an arrangement, whether they are real instruments playing along to the previously recorded backing track (only the very brave begin with 'a section' at the start of the recording process) or sequenced, synthesised or sampled re-creations, is one of the most rewarding and exhilarating (and time consuming!) elements of arranging. Sadly, it's not also the most financially rewarding aspect of the music industry -- the rate for arranging a six part score is £2.30 per bar, which means for an average pop song the fee would be less than £300 for a full six voice brass or string arrangement. But that's only if you get hired by the artist or producer as 'an arranger' for the session. If you are, you'll have to supply perfectly constructed, readable and playable parts, which you will no doubt have to amend in the studio to take into consideration 'that new chord sequence in the middle eight'. But don't think about that too much, being part of the session generally means you do it for nothing.

ALONE WITH THE HORN

One of the easiest jobs in the arrangement of brass, and the one that always gets the less-musical elements of the operation (record company liggers, parents, friends and lovers) jumping up and down shouting "it's a Hit", is the time honoured saxophone solo. This is one section in a song which definitely requires the use of a human being. The way to execute this most heralded, but elementary part of the session is simple, just call up the best saxophone player who's phone number you have, and get them to come down to the studio and blow their lungs out on your track -- in the relevant key of course. The cost of this can be as little as a pint of beer, right the way up to £200, or so, but that should buy you the best there is. If the player is good, and there are loads of stunning saxophone players around these days, the chances are they will play something brilliant first time, just like on all the really big hits.

If you want a little more control over the style of the solo you want them to play, tape a couple of your favourite solos off records. Not only will it help them, but it will save everyone the spectacle of you singing a load of incoherent nonsense trying to indicate how you think the solo should go! This never works out the way you want it to, with both you and the player ending up frustrated to the point of wanting to murder each other. If you do have a specific solo in mind, score it out in notation (most saxophone players read well enough) and save everybody having to listen to you blabbing your way through a simulated saxophone solo!

If you haven't got any phone numbers for saxophone players, just ask someone who works in a studio as they're bound to know at least one, or go to your friendly local saxophone shop and ask. Remember, punters just love saxophone solos, and punters buy records.

KICK ASS HOT SECTIONS

If you want to kick a hook line into your song and punch in a few dynamic stabs in key spots there is nothing better than a brass section at full tilt. To hire a top notch professional horn section of four players for a two hour session will set you back around a grand. To get the best out of them will mean scoring out all the parts, in the correct transpositions, before the session starts.

Why brass and horns are written in one key and played in another has been explained to me a number of times and I still don't understand fully, but I do know that if you write the notes G, A, B for a B-flat transposing saxophone or trumpet they will be played back to you as F, G, A. Confusingly, likewise, if the saxophone were one of those in E-flat, these same notes would be played back B-flat, C, D.

Once, I hired a bunch of tip top players for a session. Rather than score out everything in concert pitch and let them transpose the parts themselves into the relevant transpositions, I thought I'd be cute and do it for them. The only trouble was, instead of transposing the B-flat part up a tone I transposed it down a tone, likewise I scored out the E-flat part down three notes instead of up three notes. The discordant cacophony of noise when they started to play was a major shock to my system. Luckily for me after the severe ribbing I got about my theoretic musical knowledge (which a couple of them still delight in reminding me of to this day) they sight transposed the parts themselves.

It isn't a requirement to transpose your parts as all brass sections are able to sight transpose concert pitch-written parts into their own transpositions. They'll even scribble your ideas down -- singing a hook line isn't nearly so torturous as singing a lead solo idea. It just saves time when they're written out, and as we all know, time is money.

ELIMINATING THE HUMAN ELEMENT

On the assumption you're not proposing to invest £1,000 or more to hire a real horn section, as your bedroom studio isn't quite big enough to accommodate them (and neither is your pocket) you have two options. Option one: buy a sample CD, as advertised in this very magazine -- on these audio or CD-ROM discs (ranging from £30 to £200) are literally thousands of segments to choose from. All you have to do is find a suitable section which fits your requirement and punch it in.

The big plus side of using sample CD's is that they offer you real horn sections, playing with optimum dynamics and recorded with the correct microphones, all at the touch of a button. The downside is that you might not find anything on the disc worth sampling or which fits the bill for what you had in mind.

Option two: or, to put it another way - 'you don't have a sampler'. If this is the case, don't despair, there are many tricks of the trade at your disposal, both organic and through the wonders of binary code!

Despite the fact the MIDI sound module companies of the world have never got near to cracking a really accurate impersonation of a proper horn section, you can actually get pretty close with a bit of work. All modules respond to at least a couple of MIDI controllers, and there are plenty to choose from for added expressiveness and reality. (see MIDI Controllers box).

When you're adding a synthesised horn section to your track, try using a number of different patches for different qualities of tone and note duration. For long notes, maybe use a lush brass sound with some breath control and a touch of modulation as the note builds. For short, staccato sections use a sound with a fast decay, but then put all the different parts through a compressor (don't 'spare the rod' on this one -- give it plenty) and maybe a touch of overdrive distortion as well (but do spare the rod here -- a touch of distortion means a very small amount of growl on the sound not reducing it to a fuzzy noise!).

With modern recording, sequencing and sampling techniques it is possible to layer thousands of synthesised horn parts on top of each other, however, this doesn't mean that the effect will necessarily be more powerful. In fact, when laying down realistic horn section parts, it's better to try to limit yourself to no more than a three part harmony structure and have just one voice per part. If there are no harmony parts, the fewer the synth voices layered the stronger the part will probably sound.

COCK YOUR BOW AND GET PIZZ

Unlike horn and brass sections, the lush sound of strings has pretty much been perfected by the makers of sound modules, apart, that is, from string flurries which are available by the lorry load on sample CD. 'Video (may well have) Killed The Radio Star', but MIDI has certainly put a whole generation of highly trained string players into the Job Centre. Still, serves them right for being, in my opinion, a stuck up bunch of elitists, on the whole. Just a personal view which

should not prejudice you against hiring the entire violin, viola, cello and double bass sections of your local orchestra to play on your next demo. This will, however, set you back the cost of a small terraced house.

Also, unlike horns, voicing string sections, especially with the luxury of a couple of hundred pounds worth of MIDI, is a case of the more the merrier. If you have the necessary multitimbrality and mixing facilities, bank 'em up as high and wide as you like! Of course, you can be as subtle as you like too -- a single cello playing a simple figure can sound awesome.

Split the strings into different parts and voice the elements of chords along different paths. Remember, last month I went over parallel fifths (what d'ya mean you didn't get last month's issue?). Start by voicing strings with one line moving upwards, another moving down and a third moving as little as possible. And remember the other trick from last month, holding the highest note of the song's key across the chorus, that is a real uplifter, as both the Pet Shop Boys and the Communards would testify.

Talking of whom, the figure used in just about every high energy track consists of a note on every beat chased by the same note an octave higher on the third and fourth quarter note. This is just another handy tip, which used wisely can add to the groove of your music, or used recklessly and with no regard to the boundaries of rationality can turn your home-cooked demo into a worldwide smash. So, when you get into arranging, be creative -- don't be just be influenced by other arrangers, steal their ideas for yourself!

MASTER CLASS

Good music isn't tied to any particular genre or time period, it is and will forever remain simply good music. Having a big promotional budget or catching the media wave for 15 minutes won't make a record great as the years go by.

I've picked out four exceptional records which show the very best qualities in different aspects of arranging. You may not like one or more of the artists, but only a bigoted fool would question their excellence.

• **FRANK SINATRA *SINATRA AT THE SANDS***

Frank singing at the peak of his powers with the best big band in the world (at the time), the Count Basie Orchestra, arranged and conducted by a young, but very experienced Quincy Jones. This double album is 'The Bible' for arranging horns with class, and in tune with the content of the material and the singer's style of performance. Recorded in 1966 in Las Vegas, it shows the power of musicians playing written parts with more oomph than an entire Iggy Pop tour. Yes, there are a few sad old cabaret songs dotted around, it's a Sinatra concert for heaven's sake, but the class moments outweigh them by at least 100-1. The beginning of the show, for instance, drummer Sonny Payne strikes up a killer hi-hat pattern with Basie playing a one fingered vamp while the MC announces "and now, a man and his music" and the musical heavens open. You think I'm gushing? Just check it out for yourself. In the first song 'Come fly with me' alone, there are counterpoint alto sax gems coupled with a press roll on the drums in sympathy with the vocal line (sung in lazy frame of mind and written as such), which is chased by the trombones. Every song is crafted to perfection and every note is hand written by a master.

• **SCRITTI POLITTI, *CUPID & PSYCHE 85***

Six months is a long time in the world of music sequencing technology, so a dozen years ago must be the Stone Age of computer produced music. Yet still, to date, there's no record to touch Scritti Politti's second album for the sheer perfection of its sequenced arrangements. Put together primarily on a Series II Fairlight, it has more intelligence in one song than the entire career of the majority of sequencer based artists.

Since this ground-breaking record (which contains versions of 'Wood Beez', 'Absolute' and 'The Word Girl'), they've made only one other album (the nowhere near as good 'Provision') and produced a couple of very iffy dance pop singles for the likes of Shabba Ranks. But anyone who makes an album this slick, intelligent and ahead of its time has nothing else to prove. If you know the album, you know what I'm on about, if you don't, check out the best of the mid eighties.

• **THE CARPENTERS *THE SINGLES 1969-1973***

Sugar sweet, home cooking American drivel at it's worst? Maybe. But listen to the precision of every note, every harmony, every string line and be impressed but the fact it was the work of a couple of clean cut mid American kids in their early twenties who worked harder at their craft than most, and got closer to perfection than anybody.

From the single oboe line at the beginning of 'Superstar' to the big vocal chords in 'Close To You' there isn't a wasted harmony or string note to be found. Contrary to popular belief, the music of Karen and Richard is the standard that most big arrangements can be judged by. Whether they were using a full blown string ensemble, layering their vocals, or both, the music was complemented, not complicated. Richard's arrangement of the Bacharach/David song 'Close to you' keeps only the two five note piano figures played before the line 'That is why, all the girls in town' line from Burt's original arrangement.

The Carpenters also show the importance of allowing musicians to 'blow' over a constructed part. Take the blinding guitar solo at the end of 'Goodbye to Love' played by Tony Peluso. He was jamming over the song in rehearsal and Richard heard him hit a particularly killer lick and asked him to construct a solo using it. The result was one of the all time great pop fade-out solos.

• STEVIE WONDER *INNERVISIONS*

In the history of modern music there have many one man bands. Mike Oldfield and his *Tubular Bells*, 'the artist we have always known as Prince', not forgetting Don Partridge and his 'Rosie'. But of all the performers that have played, produced and arranged their own work, no-one has had as diverse a career as Stevie Wonder. Of the three stages of his career, the middle one shows a 21 year old man inspired. 'Innervisions' marks the mid-way point of this period. Recorded using Moog and ARP synthesizers as they were being invented, programmed by Robert Margouleff and Malcolm Cecil.

Songs like 'Living For The City' and 'Higher Ground', starting with Stevie playing the drums (that is, actually sitting behind a kit whacking sticks against skins and cymbals), to constructing chords one note at a time on bulky, unpredictable, monophonic synths, with playing so damn funky it makes James Brown sound like a karaoke backing track. If you aspire to playing everything on your own tracks, humble yourself with a listen to perfection a quarter of a century old. What a shame the biggest hit he's ever had is the bland 'I Just Called To Say I Love You'. Ever since then, I feel his music has been 'Chicken in a Basket' middle of the road nonsense.

A MAN WITH THE HORN

The Memphis Horns (the two man operation of Wayne Jackson on trumpet and Andrew Love on saxophone) are without doubt the most listened to horn section in the history of music. At the beginning of Rock 'n' Roll, barely out of high school, they were playing with the likes of Elvis Presley, Otis Redding and Aretha Franklin, and four decades later they're still going strong with a CV which reads like a directory of pop music greats, including U2, Rod Stewart, Stevie Wonder and many more. Despite augmenting their line up by with as many as eight additional players, a good chunk of their work has consisted of just the two of them, alone on stage.

They developed a system they called 1,3/5,7. It is how the two of them manage to develop the musical hook during a double chorus and throughout the course of a song. Wayne Jackson explained "When we're blowing on a tune, the first time through I'll take the root melody and Andrew will play along a third higher. Then when it comes around again I'll take start on the fifth note and he'll bust his balls playing the seventh. We swap around who starts where, sometimes, but that's the equation we always use, and it always works too."

Which only goes to show, sometimes (or more accurately, usually) Less Is More!

MAKING ARRANGEMENTS

A Rough Guide To Song Construction And Arrangement: Part 3

Published in SOS February 1998

Technique : Composing/Arranging

PART 3: This month some of the people who actually get their hands dirty with arranging - often for the household names in popular music - pass on their thoughts, hints and tips.

DOMINIC HAWKEN

As well as writing for SOS, Dominic Hawken has composed hit songs, including a Christmas Number One, for East 17, and has written for and played keyboards on their last two albums. He's also involved with producing Ant & Dec, and working with up-and-coming band Alibi and Prodigy-esque girl duo Swallow. In the past he's worked with such famous entities as Malcolm McLaren, Donna Summer, a Tribe called Quest, and Errol Brown.

"In the early days of the pop industry, roles were more clearly defined. Songs were composed by songwriters, vocal and orchestral performances were extracted by producers, and the results recorded and mastered by audio engineers. The arranger's task was to translate the chords and melodies into an orchestral score, which could then be performed in one take by a team of musicians.

"Today, of course, the modern palette of sounds is no longer limited to classical instruments, and arranging is often an integral part of the songwriting and production process. An incredible array of synthesizers, samplers and other tools is now available to aid the creative process, and digital technology allows us to shuffle entire sections of music around until the perfect format is achieved. In pop music, above all, the role of arranger has merged with those of musician, programmer, producer and writer, to become a vital part of the creative process.

"For me, arranging is primarily about creating moods. A good arrangement should hook the listener from the intro, and hold their attention through the song as the parts and melodies develop. Sounds and chord structures should work together to surround the vocal and evoke the appropriate emotions. Everyone has their own way of achieving this, and there can never be an 'ultimate' arrangement for any track -- experimentation is the key.

"Songs can evolve from a wide range of starting points. You may be working from a demo, with many of the parts already defined, or you may have just a title. Either way, it's good to start by taking an objective step back. Imagine how the song might sound on your car radio, segued between adverts as you negotiate a particularly tricky junction on the M25. What sounds would grab your attention, and make you turn the radio up? As the music continues, which melodies fill your mind and keep you enthralled? Try to translate your ideas into reality as quickly as possible. The more you work on a song, the less objective you become, and your first impressions are often correct. You might listen to a track thousands of times as you work on it, but the general public will be lucky to hear it a couple of times on the radio before it drops from the playlist.

"Start by developing a fundamental groove, which will underpin the entire song. I find it helps to work with a basic 'old-faithful' set of sounds -- drums and percussion in the sampler, 'real' instruments from a selection of sample players, and an assortment of other synths. Using these familiar sounds, I can quickly build up the bare bones of an arrangement and test my ideas. As the groove begins to emerge, I begin to replace the original sounds with new and stronger versions. If you're stuck for inspiration, think of other great songs with a similar feel, and try incorporating some of the rhythms. You can use software tools like Steinberg's *ReCycle* to slice up beats and move sections around, or reverse them to add interest. The old adage "it's not what you play, it's what you don't play that counts" still applies -- if you get stuck with a certain part that's not working successfully, leave it out and move on to another. Never confuse complexity with creativity; it's usually the simplest melodies and sounds that are the most memorable and have the greatest effect.

"From a listener's point of view, the two most important sections of any pop song are the intro and the chorus. The intro sets the mood of the song, while the chorus is the section that filters through into the listener's subconscious and delivers the ultimate hooks. Often the intro is a cut-down version of the chorus, with some of the instrumentation muted. Use it to grab attention, preview the main riffs, and then drop down into the first verse. Work on these sections first, and then move on to tackle the second verse, middle eight and outro. It's always good to try and record a guide vocal as soon as possible, so that you can build the arrangement around the voice rather than leaving it to the end of the session. Remember that the voice is the most important instrument in any song and should be treated as such. Some musicians can get so carried away with producing their epic backing tracks that the vocal becomes totally swamped, or sits 'on top' of the track rather than within it.

"Try to ensure that the chord structures and sounds work together to generate emotion, and take advantage of the entire sonic spectrum, using sounds with frequencies that complement each other rather than compete. Clever panning and equalisation on the mix can also help in placing each instrument within its own 'space'.

"Above all, get creative. Keep pushing yourself to find new tricks and techniques to give your arrangements that extra edge. Take regular breaks while you work, to keep your objectivity, and always try to judge your arrangements from the perspective of a new listener. Oh, and that other vital thing I forgot to mention -- enjoy it!"

ANDY BUSH

Andy Bush (trumpet, flugelhorn, French horn, amongst others) and Steve Hamilton (all flavours of saxophone and woodwind) make up one of the most in-demand horn sections on the British session circuit: Hook Horns. Working for artists including Tina Turner, Chaka Khan, The Brand New Heavies, Swing Out Sister and Blur, they know a thing or thousand about getting a tasty horn part onto a track.

"Our basic philosophy of how a horn section should be applied to a track is 'Musical Seasoning' -- to be used sparingly to add some colour. When you enter the studio you have to leave your horn player's ego at the door. We're there to give the track the lift the producer or artist wants. It's not about how technically stupendous you are as a player; it's all about the groove you can add to the track, to give it the right feel. We're there to be sympathetic to the song, and as a rule the best horn lines are the most idiomatic to the genre of music you're working with. That's why it's essential to have a knowledge of the heritage of horn writing in popular music, to be able to use the style most appropriate to the track.

"Recommended tracks to listen to, for brass arranging and playing at its simplest and melodic best, are: The Average White Band's 'Pick Up The Pieces', which is basically a selection of riffs in the E-flat Dorian minor scale, Stevie Wonder's 'Superstition' an E-minor Pentatonic tune, and the middle section of Wilson Pickett's 'Midnight Hour', which shows that melody is everything -- although if you want to know everything there is to know about four-part harmony and contrary harmonic motion, check out any of JS Bach's chorales -- they are the gospel when it comes to harmonic movement.

"It's important, when writing harmony parts, to keep the notes of the higher voicings as close together as possible. This gives a dense, thick sound to the section. This doesn't apply to baritone sax parts, which are perfect to play an octave below, or for low counterpoint leads to the main section. The most powerful and expressive range of any brass instrument is generally the middle 60%. Think of a Fender Rhodes, which has a lovely warm sound in the middle range of its keyboard, but the highs and lows start to fall out of range, becoming thin at the top and muddy at the bottom. It's often the same with horns -- with the exception of tenor sax, which has, at the top of its range, a very 'pokey' quality, excellent to sit below a top-line trumpet. The bottom extreme of the tenor sax's register is very ballsy, which is perfect for rock and roll hooks. Very high trumpets are also great, but often need support so that the texture does not sound 'spread' and full of holes.

"A strong sound can be obtained from just a tenor sax and a trumpet playing in unison, or in simple two-part harmony, but adding an alto sax will give the section brightness and diverse harmonic possibilities -- and it's in a register to fully support a lone trumpet player. Two trumpets and two saxes make up a full-on brass section and, if the budget allows, adding a trombone will give a real thickness to the sound and will allow for the accommodation of serious harmonic inversions.

"One of the most successful sections to blow their horns since the beginning of rock and roll are the Tower Of Power horns. They're made up of two trumpets, two tenors and a baritone sax, used for rhythmic counterpoint. One of the trumpet players doubles as a trombone player and one of the tenor players doubles on alto, giving them the ultimate combination of voicings.

"With regard to recording, it's important to get the high-energy sound of a brass section onto tape. Brass lines are often best recorded very loudly, with maximum intensity, but keeping the sound very focused at all times. If you record someone screaming at the top of their voice and then play it back quietly, it will still sound like a scream. Whereas if you record a whisper and turn it up really loud it will still sound like a whisper. Dynamics, always very important, are best applied using mic technique and choreography, to avoid a loss of intensity.

"The ideal environment for recording brass is a semi-live room. There was a trend a few years ago for recording everything in dead areas covered in egg boxes or expensive acoustic tiles that do the same job, but a room with some natural 'splash' adds a much better quality to the sound and is easier to play in. Saxes and trombones should be close-miked, and trumpets are often best recorded between three and six feet away from the mic, if possible. That allows the whole EQ spectrum of the instrument to be captured without the mic clipping and losing high frequencies. The best mics for horns are Neumann 87s or 47s, or AKG Tube, 414s or C3000s. Rode NT2s are also very good. For the full bright intensity of a brass sound a touch of compression can help, but it's best to record and mix with absolutely no EQ on the desk. For hi-tech intense horns, tracking of each part is often the key, but this requires extreme accuracy to avoid any loss of sharpness and clarity.

"If you're arranging for a horn section, make sure you write in appropriate rests to allow the players to breathe; horn players can have tremendous stamina, but they do need to breathe at least once during a three-minute song!"

Andy Bush studied under American horn guru Jerry Hey, who has played and arranged on thousands of massive hit records: Michael Jackson's *Off The Wall*, Earth Wind & Fire's *Raise!*, and Rufus with Chaka Khan's *Stompin At The Savoy*, which is a live gem. *Big George*

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PETER GUNN

Legendary rhythm and blues producer Peter Gunn talks about his arrangement and production techniques.

"Record companies bring me in at the pre-production stage, where the songs are usually in need of some sorting out. They're either too long (especially the outros) or the choruses aren't strong enough and in desperate need of a good hook, and the arrangements are often very one-dimensional. So the first thing is to get the song structure into shape -- maybe put an instrumental chorus at the beginning of the song, link up the first two verses, make the third verse drop down to a much sparser arrangement, add a solo section after the middle eight, and maybe add a stop break to give the song a kick. The next step is to get the bass and drums working. Drummers tend to over-play, so I sit them down to listen to something like James Brown's 'Hot Pants', which is an incredibly funky track with a solid backbeat, but the drummer is playing it dead straight, with only the occasional simple fill. Then I get the bass player to lock their part in with the kick drum. If there's one rule I use for arranging rhythm parts it's 'Less Is More'. If I'm working with two guitarists I get them to take on different rhythmic elements, rather than both of them playing the same part, which is what they usually start out with. Sometimes it's a simple, almost undetectable element within the rhythm pattern that will lift a song from being another track to being something extra special.

"Adding horn sections or keyboards is easy: I get a section in and tell them what I want, they do all the work themselves, and it always sounds exactly how I wanted it. But when it comes to lifting a song there's nothing more important than percussion. The three main elements I use are shakers, tambourines and hand claps. I have my own secret recipe to making shakers and I always turn them up loud in the mix. With tambourines I use two different techniques: first is the traditional rhythmic hand shuffle, over which I'll use a large piece of wood bashing the tambourine on the beat. With hand claps I find it easier on the band's hands to use two planks of wood whacking against each other; mic boxes give a different but just as effective sound. If you add a track of the band clapping over the top of this you get a killer hand clap sound, perfect for classic records."

You can hear Peter Gunn in action on the forthcoming Virgin Records release by Camden Town's answer to the Stooges, *Electrocuting Elvis*. This features the certain-to-be-a-hit-record cover of the Doris Day classic 'Move Over Darling'. *Big George*.

"When it comes to lifting a song, there's nothing more important than percussion."

ELIOT KENNEDY

Eliot Kennedy has written Number One hits for the Spice Girls and Take That, and has also worked with Dannii Minogue and Boyzone, and for Michael Jackson's label MJJ. We asked him about his favourite studio gear for getting arrangements together.

"From an arrangement perspective that's kind of difficult, and I might have chosen an Akai sampler simply because you're able to arrange complex harmonies, sample them and put them in a tiny bit of memory, do the same with horns and work that way. The sampler is the key to the way I arrange, but of course it has to be integrated with a computer. If I had to name a single piece of gear it would probably have to be the Roland JV1080, just because of its flexibility and multitimbrality. I also like the upgradability of a 1080 -- you can load in so many cards and never worry about running out of sounds. It's also got 64-note polyphony, so you seldom run out of voices. You can get drums, keyboard parts and a bass line together on just the one synth, and literally write several demos with just that one synth."

And getting the basics down is one of Eliot's essential tips: "Don't think too much about how the record's going to sound at the end of the day -- a lot of people have this vision in their head and struggle with the initial sounds. Just get the parts down and make sure the song is working musically rather than aurally. Then, once you know it works, you can dress it up in any fashion you like. That's why I like the 1080, because you've got some good solid sounds in it -- the basses and piano, for example -- so that you don't have to mess around trying to find a sound." *Nigel Humberstone*

MAKING ARRANGEMENTS

A Rough Guide To Song Construction And Arrangement: Part 4

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Technique : Composing/Arranging

PART 4: This month, BIG GEORGE persuades more famous musicians and arrangers to give you the benefit of their hard-won wisdom.

DEBBIE WISEMAN

Apart from being one of Great Britain's top film composers (see interview starting on page 152 of this issue), Debbie Wiseman also does all her own arrangements and orchestrations. She spared me a nanosecond of her time to explain a few of the arrangement techniques she used while she was scoring the forthcoming film Tom's Midnight Garden.

"I tend to orchestrate as I go; there's no point in writing something high and frivolous for a cello which will eventually be played by a piccolo. Planning out what different members of an orchestra are going to play is similar to picking a football team. It's not good having a centre-forward playing in goal, but sometimes you do want a defender to make an attacking run.

"It's most important that every single line you write for a section should be a workable line in its own right. The strings are the heart of any orchestra -- a perfect section would comprise 16 first violins, 14 second violins, 10 violas, eight celli, and six double basses. If you use a smaller section you have to be careful, as every little intonation and bowing shift will be more exposed. The more strings you have, the richer the texture, and the more expressive you can be harmonically. A section of eight first violins, six second violins, four violas, four celli and two double basses is a big enough canvas to work with to achieve a fully symphonic depth to the sound, but you will have to tailor the harmonies so as not to leave any part exposed. If I'm writing primarily for a string ensemble, I might start with the melody played by the first violins, followed by the melody accompaniment played by celli and the basses. I don't tend to double the celli and the basses together very often, as that can make the texture sound heavy and lumpy. I have the basses coming in and out to emphasise different passages, either playing arco or pizzicato. As the piece develops, the violas might take on the melody and the second violins' counter-melody might meld into the first violins' figure. The role reversal will be different for every arrangement I do -- there really are no hard and fast rules.

"Sometimes the strings are there only as a bed for the woodwind. If you only have a small violin section -- say, eight players -- you can give the sound a real boost by doubling their part with a flute. If you want the flute to take a lead role in the piece, on the other hand, it's important to clear the rest of the orchestra out of its tonal range. Otherwise the sound becomes muddy and indistinct, and you can lose the flute's definition.

"As for developing an arrangement, I'm composing a solo flute piece at the moment, and prior to the cadenza (the flamboyant solo section) I've kept the arrangement quite sparse. Then, at the end of the flute's moment of glory, when it's time to start up the orchestra again, I've eased them in and then voiced the first and second violins in and around the flute's melodic line, to strengthen the figure. I've also included answering passages between different instruments to add an extra element to the arrangement. Oboes and bassoons work well together in this way, as do flutes and clarinets. But the main thing with orchestral arrangements is this: if something is going to happen, like a soaring woodwind line exploding out of a quiet section of the piece, it's worth milking the moment prior to it happening. In other words, keep them waiting.

"I know a lot of composers use orchestrators, but I do it all myself. I find orchestrating goes hand in hand with the actual compositional process. I will write for a specific instrument as I'm composing, rather than sort it out at the end."

SNAKE DAVIS

Chris 'Snake' Davis is about as cool a musician as it's possible to be in Great Britain. Apart from being live musical director for international pop icons M People, his CV reads like a Who's Who of chart-topping turns, from George Michael to the Spice Girls, the Pet Shop Boys to Primal Scream, Mark Morrison to Take That, Sir Paul McCartney to Ray Charles -- and so on. As either head of a wind section or the entire section himself, he always leaves a recording session sounding infinitely groovier than it did when he arrived.

But just how does he go about arranging live versions of hits like 'Search For The Hero Inside Yourself' for M People?

"When we go on tour it's important to give the fans what they want, which is longer, interactive versions of the hits. I'll look for sections that can break down, or somewhere we can stick a solo in, that will groove along for a couple of minutes. With 'Hero', in particular, we re-arranged it so that during the chorus the whole band stops, and we get the audience

clapping and singing along for 16 bars, then the drummer kicks back in, and then the rest of the band follows. We also changed the dynamics, replacing the snare for a rim-shot for the intro and first verse. It made the chorus thunder in, which gave the song another dimension.

"Typically, endings need to be sorted out, as on records they usually fade out. You can spend bloody ages trying fancy chords and dead stops and intricate little fills, but nothing works better than a nod and everyone stops. At the end of some songs we'll go round the chorus quite a few times, with someone blowing over the top, the audience joins in the singing, and it cooks.

"Rehearsing for tours these days involves a lot of pre-production, just the same as albums do. We'll start with Paul Heard, me and Merv (our programmer), in a room for two or three days getting the structure of the songs together. Then w

**Debbie
Wiseman:**
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e'll take what we've got into a dingy rehearsal room and work things out with the rhythm section for a week or so. This is for tracks that, on record, might have had a lot of time spent on getting a keyboard bass part and sequenced rhythm together. The bass player and drummer will take it live, as there are loads more options with live players to get a killer groove to evolve, and that's when things start to happen on stage. Live, we use sequencing in a very small way, and if there are things that can't be recreated live we prefer to put them into a sampler so the keyboard player, with the simple push of their index finger, can produce 10 Snake Davises playing the hook. I'll also use my EWI [Akai wind controller] to play large sections live. In truth, it often doesn't hurt to leave out a string section that may have taken a week to record in the studio. I'm a great believer in things being different on stage than on the record. To me it's not a compliment if fans come up afterwards and say, "that sounded just like the record". I prefer it when they say it was different from the record, or better.

particularly liked, so we basically arranged their completely sequenced version for a live band. It also had a two-minute intro which really built up musically before Heather [Small, lead singer] came in singing, which allowed her time to go off and change her dress.

"Coming up with fresh arrangements for different tours is something we like to do. On a single like 'Sight For Sore Eyes' there are an extra five remixes which were done by other people, and we'll take elements from them to include in the stage versions. The Brothers In Rhythm remix of 'Open Up Your Heart' was one we

To hear Snake Davis in action, pick up any one of a hundred hit records over the past 10 years. You might even have caught him a few years ago as the sax player on Jonathan Ross's TV show. Alternatively, there's a Snake Davis Band live album called *Reaching Out*, available mail order from Andrea Parker, 50 Oxford Road, Carlton-in-Lindrick, Worksop, Notts S81 9AZ.

PETE THOMAS

Pete Thomas has spent the last 20 years securing his place in history as one of the all-time great British rock drummers, first coming to international prominence as the engine-room for Elvis Costello, from '(I Don't Want To Go To) Chelsea' right up to his latest album All This Useless Beauty. His career has covered a vast area; he's worked with such artists as Latin kings Los Lobos, Suzanne Vega, Squeeze, Bonnie Raitt, Tom Jones, Sir Paul McCartney, Tasmin Archer, Matthew Sweet and The Waterboys, right up to the latest Bond theme sung by Sheryl Crow.

His career started long before punk rock, when, after a two-year stint with pub rock legends Chilli Willi and the Red Hot Peppers (while still a teenager) he moved to the West Coast of America to join the country-rock giant John Stewart (best known for writing the Monkees hit 'Daydream Believer'). While out there he learned to play red-hot country guitar, and if he wasn't such a freak for the drums he could probably have made it as a Nashville Picker. Increasingly these days he is called upon for his unique flair for thumping the best out of guitar-strung singer/songwriters.

"The first thing I do when I get to a session is get the artist to play the song to me, all the way through on guitar or piano. I've got a shorthand way of writing the arrangement out, by simply sketching the structure (for example, 4 bars intro/8 bars verse/16 bars chorus, and so on). It only takes me once through the song to write it out, unless there's something I don't understand -- then I'll always ask to go over that bit again, for as long as it takes. That's usually enough to get going, but if it's a tricky one, with loads of accents and weird bar lengths, having a shorthand version makes dividing up a sheet of manuscript and writing out the parts in full a hell of a lot easier.

"What often happens with singer/songwriters is that they've got a great song, with great lyrics and perfect chords, but they've only 'sort of' worked out the arrangement, and there are some bits that go all squirmy, so this is the best way for me and them to get to know exactly what happens throughout the tune. So when I start to play the song I've got an accurate map to tell me what's going to happen and when. As for the pattern I'm going to play, I usually get them to

mouth the beat they can hear in their heads, or they'll play it on their knees. I don't ever try and get clever with it -- if that's what they hear, that's what they'll get. If I'm going to get a bright idea it'll occur as we're playing the track.

"Another thing I do early on is tune my drums to the musical key of the song. If the drums are in tune with all the other instruments, it's going to sound right to begin with. I find it mad when studio engineers try and get a drum sound before they've even heard the song. It's definitely going to change, depending on the pitch I'll tune the toms to and what snare I'm going to use.

"A lot of the time it's just me and the rhythm guitar/singer, maybe a bass and sometimes a keyboard. The main aim is to get the drum track down with all the intensity needed to support whatever the producer might want to pile on top of it later. As long as the drums go down, everything else can be patched up or replaced. But it's best when there's a full complement of players. Then if someone's doing a great solo I'll think, 'How can I lift this part of the song and make it more exciting?'. The ride cymbal is the first place I look to, and if it's a storming performance I'll give the bell end of it a good old whacking.

"Working with Elvis Costello on over a dozen albums and a million tours, I'm used to a singer singing at full tilt every time he opens his mouth, whether it's the first time through a song, or at a sound-check, or a live TV performance in front of an audience of billions. So when I'm recording I like to have the singer doing a guide with all their emotion coming out. That way I can feel where something might need a little push, or alternatively where something needs a bit of space."

