

String Theory

Arranging For Strings: Part 1

No matter how good the latest, greatest orchestral sample libraries may now be, you still need to develop your arranging skills if you're to create convincing string parts in any genre. In this first article in a new series, we explain how to get started.

DAVE STEWART

Over the past few years, I've been lucky enough to get occasional work as a string arranger. My qualifications for the job are not the conventional type; I didn't progress academically beyond music 'O' level, go to music college or learn my craft working with orchestras, but I do have a store of self-taught musical knowledge acquired over a lifetime of composing,

and certain practical skills developed via playing keyboards professionally since I left school (a happy event which took place not long after the demise of black and white television).

I've always enjoyed arranging for orchestral instruments: I started out writing parts for small sections and soloists to overdub on my former bands' albums, then progressed to the larger ensembles required for film and larger-scale pop/rock productions. But, of course, in the music biz, who you know

is far more important than what you know, and I must admit that most of my recent arranging jobs stemmed from my friendship with a member of a successful band. When he mentioned that his group needed a string arranger for their new album, I volunteered my services, and (thanks to the powers of nepotism) was duly hired.

In case you're wondering, the band in question was Porcupine Tree and the album was *Fear of a Blank Planet*, released in 2007. Following that,

Porcupine Tree's singer/guitarist Steven Wilson invited me to arrange strings for a song called 'Truenorth' he'd co-written with colleague Tim Bowness for their longstanding art-rock project No-man. I thought it would be instructive to explain how I set about creating this particular arrangement, both from a musical and technical standpoint, in the hope that it might help demystify the somewhat daunting business of writing for strings.

Sizing Up

When creating a string arrangement for real players, it's important to be clear in your mind what kind of ensemble you're writing for — after all, 'strings' can mean anything from a string quartet to a full-sized string orchestra of 60 or more players. The size of the ensemble is usually commensurate with the magnitude of the budget, and because the players' session fees tend to be the most expensive component of string recording, there's always pressure to keep the numbers down — "Do we really need 26 players? Can't we manage with 12?"

While it's pleasant to daydream about writing for a full-scale symphonic line-up, I've found that you can get a very pleasant, acceptably rich and lush sound with 22 players: 14 violins, four violas and four cellos. The violins are traditionally sub-divided into first and second violins with the firsts outnumbering the seconds — I usually specify an 8:6 firsts/seconds split, giving an ensemble line-up of 8/6/4/4.

For projects requiring more low-end weight, I've sometimes expanded the lower strings to six violas and six cellos, but with that line-up you have to be careful not to overload the bottom end — six unison cellos is a pretty big sound! You'll notice that I haven't mentioned double basses, the reason being that most of my arranging gigs have been for pop/rock projects where the low end was already dominated by a bass guitar or bass synth, thereby making double basses redundant. However, in a film score I wrote in 2008, the instrumentation and final mix was left entirely to me, so I gleefully added four basses to my 8/6/6/6 line-up.

I know what you're thinking: "I'll just hire four players and overdub them lots of times." I can tell you that doesn't really work. Quite apart from the Musicians' Union restrictions and surcharges on overdubbing, recording multiple takes

Downsizing: You Decide!

When it comes to recording strings, bigger isn't always better: when we recorded 26 string players on Anathema's album *We're Here Because We're Here*, Danny Cavanagh (the band's main songwriter) asked if we could try one song again with a smaller line-up. The players were amenable, so we halved the section sizes from 8/6/6/6 down to 4/3/3/3. That created a more intimate, chamber-orchestra kind of sound, but Danny wanted it smaller still, and we ended up with

a radically slimmed-down 2/2/2/2 line-up.

Between takes, the unneeded players would put on their coats and leave, so the view from the control room was like watching a speeded-up *Big Brother* final. The octet performance sounded very nice indeed: with only two players on each part, you could hear the individual instruments' expression, which added a personal, emotive touch. As a result, we used both an octet and a larger section on subsequent Anathema albums.

with the same players doesn't actually create a lush sound; instead, it thickens the sound in an undesirable way. The rich timbre, power, emotional expression and musical direction of a string section is created by a group of people moving the air in the room by wielding their bows *en masse* — if you stand in their midst while they're playing, it's a stirring experience that brings a lump to the throat. A handful of players can't agitate the room acoustic in such a profound way, and it would be naïve to think that overdubbing a string quartet six times will achieve the same result as recording 24 players playing together. The same applies to tracking up solo instruments — you'll get a bogus, unnaturally dense approximation of an ensemble sound, but it will lack the luxuriant, sumptuous, airy and unified quality of a single large strings group.

Flying North

No-man's 'Truenorth' was scored for eight first violins, six second violins, four violas and four cellos (referred to as celli in orchestral circles). The piece started life as a three-and-a-half-minute song called 'Another Winter' written by Tim Bowness, but, this being art-rock, ended up as what has been described as a "13-minute semi-orchestral epic" after Steven Wilson added his contribution. In this article, I'll focus on a 12-bar extract from an instrumental section that happens immediately after the opening verses.

To get the ball rolling, I was sent two stereo audio files: a rough mix (including the vocal) and a 'strings guide' demonstrating Tim's initial ideas for the string arrangement, on the understanding that I was welcome to add my own creative input. As the entire song was played at 75bpm and both files started bang at the top, it was easy to import them into Logic Pro and construct a new song. I subsequently used this Logic song to create a MIDI mock-up which would

serve as the demo of my arrangement.

Defying the convention that says chord sequences must be four or eight bars long, the first part of 'Truenorth' is based on a repeated three-bar sequence consisting of two bars of F-major-7 followed by one bar in A-minor. Allied with a haunting, hypnotic, repeated 8th-note piano riff, this asymmetrical structure adds to the song's sense of elusiveness and mystery. Tim Bowness' strings guide for the 12-bar instrumental section was essentially a sustained chord pad, the first half of which featured a high melody line, while the second half was based on a low-pitched, sustained A-minor chord.

My method of writing string arrangements involves two distinct phases, which we can call composition and orchestration. I start by working out the essence of the arrangement on a keyboard (composition), then decide how to assign it to a real-life ensemble (orchestration). The second phase often entails minor rewrites and adjustments due to instrument-range considerations (more of which later). Some composers hire an orchestrator to transform their MIDI mock-ups into orchestral scores, thereby splitting the tasks of composition and orchestration — but while that's acceptable practice for a busy composer, to work as an arranger you have to be able to cover both jobs yourself.

I realise that my particular approach won't suit everyone: some may prefer to go directly to the orchestration phase and build the arrangement one instrument at a time, while others might want to work the whole thing out on paper before turning on their computer (don't laugh — it worked for Mozart). Whatever your method, you'll have to make a decent demo of your arrangement for your clients, as it's unreasonable to expect them to spend a considerable amount of money

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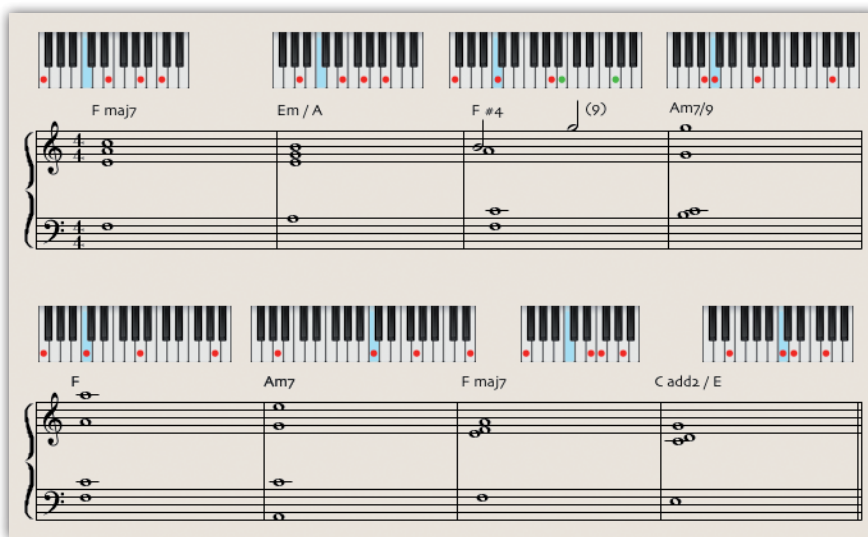


Diagram 1: The string arrangement for the featured extract from 'Truenorth' is based on a sequence of eight chords, with each of the 'F' chords played for two bars. The third chord contains a melodic movement from B up to G, shown as green dots; the sharp symbol in the name 'F #4' refers to the B note, which in the key of F-major constitutes a sharpened fourth interval. Middle C is marked in blue.

» on recording something they've never heard before. Throughout the arranging process, the important thing is to stay focused on the musical content and try not to get bogged down in technical issues (easier said than done in this age of constant technological change).

I began the 'Truenorth' arrangement as I always do, by looping a passage and jamming along on a keyboard, using an all-purpose full-strings keyboard patch I programmed myself. My patch doesn't accurately replicate the sound of a real string section, but it creates a close enough impression and (more importantly) I find its lush timbre inspiring. Although my instinct is usually to take a chordal rather than linear approach, the melody line in Tim's first six bars was so strong that I felt it needed to be built into the arrangement from the outset. With that in mind, after some experimentation I ended up with the basic sequence shown in diagram 1.

Introducing Movement

Although they provide a useful starting point, chord pads such as these do not a string arrangement make. When working with real, living and breathing players, you have at your disposal musicians and instruments of great expressive power, so rather than writing a series of block chords where everyone changes note together at the top of the bar, it's nice to introduce independent melodic movement (aka 'counterpoint') — for example, the cellos playing a melody

while the higher strings sustain a chord. Even if the movement in question spans only a couple of beats, it gives players a chance to step up and impart extra expression to their performance, thereby varying the ensemble sound and helping the music to breathe.

Having settled on the eight basic chords for the instrumental passage, I began to consider where such movements might be beneficial. An obvious starting point was to make the bass part move more fluidly, first by inserting an intermediate G note between the F-major-7 and A-minor chords, and secondly by tacking a simple rising line of B and C onto some of the A-minors. These movements are marked in red in diagram 2. Some of them sounded like they needed harmonic support, so in the second bar I added an F above the low G. That seventh harmony sounds rather

odd and unsatisfying on its own, but when you factor in the sustained notes of A and C over the top, it forms a temporary 'F over G' chord, which (IMHO) has quite an interesting, unconventional effect.

Sequencing The Dots

My next step was to sequence an accurate MIDI version of the diagram 2 music in Logic, using my trusty full-strings keyboard patch. Even though this was only a guide, I tried to get a good rhythmic feel without using quantisation. Because strings' bowed notes 'speak' more slowly than most other instruments, placing them bang on the beat always makes them sound late, and for that reason I generally avoid hard quantisation, but a workable compromise practised by some canny pros is to first quantise the performance, then drag all the notes back in time until they sit comfortably over the backing track.

Listening back to my 12-bar sequence playing over the backing track, it was evident that the arrangement needed more high-end action. This was easily achieved by doubling the top part an octave up, a simple, classic and highly effective device for strengthening melody lines. A further improvement was the addition of dynamic movement. This is an area in which real strings excel, and arrangers should always try to take advantage of their ability to perform beautifully expressive, subtle volume swells and fades.

I generally draw in dynamics by hand on Logic's Hyper Draw page, using MIDI Continuous Controller 11 (expression) as the volume controller (see diagram 3). I've tried using an expression pedal in the past, but that usually ended in tears. Most modern strings sample libraries assign volume control to the mod wheel,



Diagram 2: The chord sequence now features melodic movements, marked in red.

which can produce excellent dynamic results; however, as I like to play with two hands most of the time, it's not a viable option for me.

Part Writing

The addition of dynamics meant that the MIDI arrangement now had all its essential musical ingredients, so I could move on to the next phase and turn it into playable parts for the players. This requires a basic knowledge of the individual instruments of the strings family: if you're new to the game, please take a look at the 'Home On The Range' box, which shows the playable ranges of the violin, viola, cello and standard four-string double bass. You'll notice that the instruments' ranges overlap considerably: the viola (pitched a fifth lower than a violin) can play quite high up in the violin range, to good effect, while all four instruments are

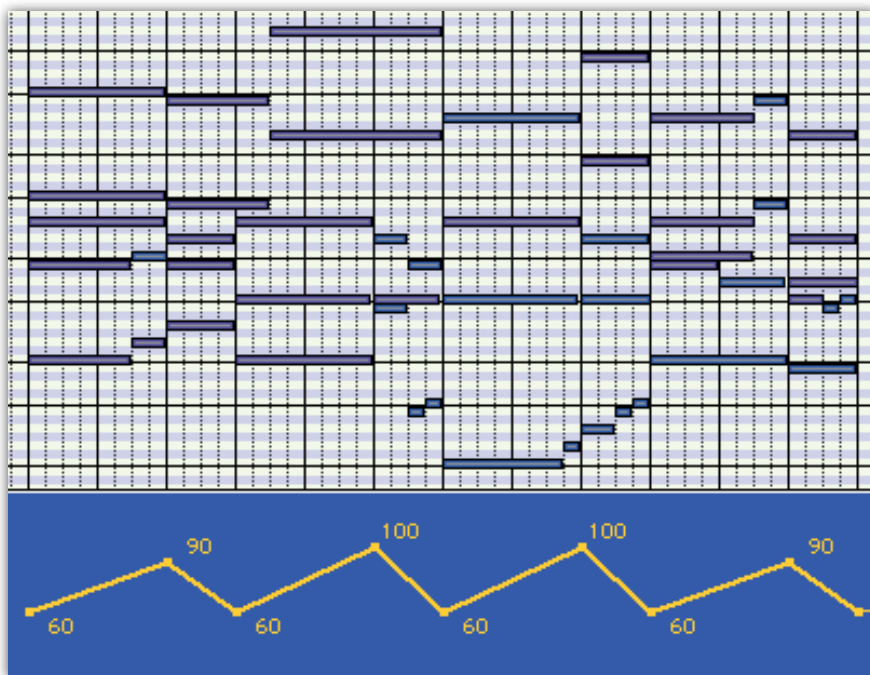
Diagram 3: A hand-drawn expression (CC#11) curve on Logic's Hyper Draw page. Use the mouse to put the peaks and low points where you want them and Logic automatically fills in the intermediate values.

capable of covering the G3-G4 register.

When creating sampled demos, it's all too easy to lose the plot and end up

writing an impossibly low part for an instrument (I've done it myself, and had to be corrected by my copyist!). As well

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» as keeping a watchful eye on their lower limits, you should avoid writing extremely high in an instrument's register unless there's a compelling musical reason to do so: the violin's stratospheric top notes, for example, are hard to play accurately, so it's best not to write extended loud passages in its highest octave. On the other hand, the strings' extreme low register can have a wonderfully rich, throaty quality, but you should bear in mind that bottom notes (such as the low C2 on a cello) can't be played with vibrato because they fall on an open string.

A simplistic approach to four-part string writing (though not always workable in practice) is to assign the top part to the first violins, the second highest part to the second violins, the second lowest part to the violas and the bottom part to the cellos, which are often doubled an octave down by the basses. A simple example of this is the C-major chord in diagram 4. There are many exceptions to this

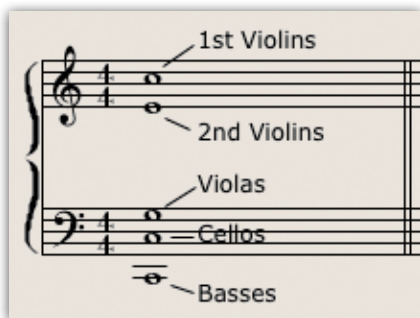


Diagram 4: Simple instrument assignments for a five-note chord.

approach: it's not unusual for the second violins to cross over and play higher than the firsts, or you might want to orchestrate a high-pitched six-note chord using only violins and violas. (The latter approach requires a technique called 'divisi', which I'll describe later.)

Painless Extraction

In order to derive individual string parts from my MIDI keyboard arrangements, I use Logic's piano-roll (aka 'matrix') editor, which displays a simple graphic representation of the notes. Looking at the piano-roll rendition shown in diagram 5, it was clear that the lowest line (marked in red) would be played by the cellos — a no-brainer, since we had no double basses and neither violas nor violins can play that low! Having established that, I highlighted those notes and assigned them all to MIDI channel 4, which can be done quickly and globally in Logic's

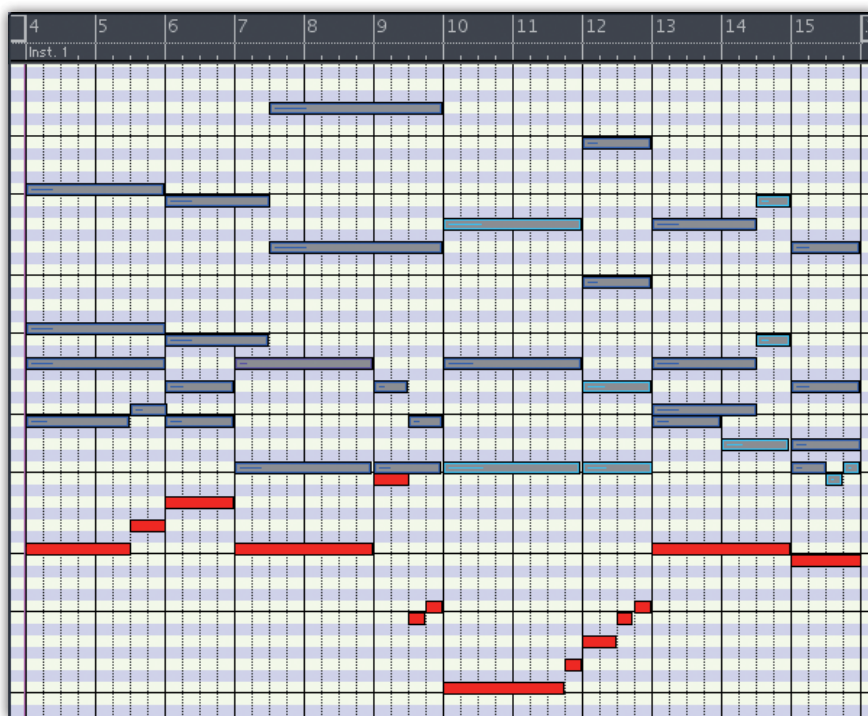


Diagram 5: Using a piano-roll editor to highlight the cellos part.

event editor. I then highlighted all the notes in the second-to-lowest line (as in diagram 6) and assigned them to MIDI channel 3, and so on.

The object of the exercise is to end up with first violins, second violins, violas and cellos assigned to MIDI channels 1-4 respectively. In this arrangement, there was the slight complication that the top line was doubled in octaves, which

theoretically gave us five parts instead of four: the simple solution was to divide the first violins into two groups, with four players taking the upper note and the remainder playing the lower. The musical term for that is 'divisi', which the players refer to simply as 'div'. I assigned both violin divisi parts to MIDI channel 1.

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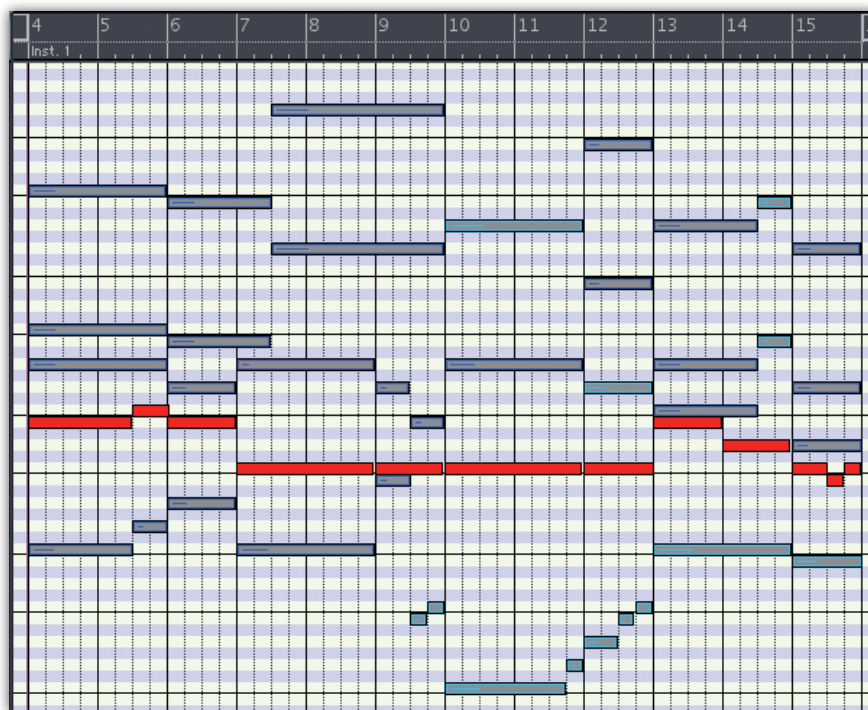


Diagram 6: Using a piano-roll editor to highlight the violas part.

» Having 'channelised' the arrangement in this way, I use the following procedure to extract the individual parts: close the piano-roll editor, highlight the MIDI region containing the arrangement, and select Region/Split/Demix/Demix by Event Channel. This extracts the individual MIDI channels and places them on separate sequencer tracks, which you can use to play the individual parts. These tracks will also come into their own when you create a score, which I'll come to shortly.

Demo Fever

Before sending a demo to the band, I needed to make the sound more realistic, so I loaded a template I'd created using VSL's Chamber Strings library (which contains multisamples of six violins, four violas, three cellos and two double basses). The VSL collections are renowned for their large choice of articulations, but for the passage in question, all I needed was the basic 'sus vib' performance style. The samples would soon be replaced by real players, so there was no point making the demo too elaborate.

Unlike some string libraries, VSL don't supply separate first and second violins, so I used the same patch for both. The only down side of this is that if the firsts and seconds happen to play a unison note, you'll hear the unnatural, 'phasey' sound of the same sample sounding

twice, but there were no such unisons in my arrangement. My chamber strings template comprises a violin patch on MIDI channel 1, the same patch (for the second violins) on channel 2, violas on channel 3 and cellos on channel 4. To get the best out of the VSL samples, I globally increased the velocity value of their MIDI tracks by 20 or so in order to access the instruments' *mf* dynamic; I also copied the CC11 expression data I'd created for my original keyboard part to each of the four instruments, so they would all follow the dynamic changes.

After slapping on some reverb, the chamber strings sounded pretty lifelike, but before bouncing them I put on my producer's hat (available at Asda stores for only £2.99) and added a dash of my original keyboard patch to the mix to sweeten the sound. I sent the composers two stereo files: a mix of my demo strings and their rough mix (so they could hear the arrangement in context), and a separate strings-only file so they could pinpoint its musical details.

Had my brief been to produce a sampled string arrangement with no live players involved, I would have spent a lot longer programming it. Libraries such as East West Quantum Leap Hollywood Strings, VSL Appassionata »

Home On The Range

The error most frequently made by novice string arrangers is to write notes that aren't physically playable on a particular instrument. Below is a chart showing the playing ranges of the four members of the strings family, as specified by the Vienna Symphonic Library (to whom thanks). Middle C is C4. The double-bass range is for the standard four-string bass with a low E string (tuned the same as a bass guitar); a five-string instrument with an additional low string tuned to B0 or C1 is also available.

Make sure, when writing, that you stay within an instrument's actual range!

» Strings and LA Scoring Strings (to name a few of the big-hitters) contain superb recordings of orchestral string sections, but using them to produce realistic arrangements does involve a fair amount of rather pointillistic and intensive work. If you program the different instruments' lines separately and make use of detailed articulations such as true legatos, different note lengths, scale runs, glissandi, and so on (an area I'll investigate in detail in subsequent articles), you can narrow the gap between sampled and real strings to the point where the average listener won't be able to tell the difference. However, because of their built-in limitations, even the best samples can't quite capture the delicate, mobile shades of expression of the real thing.

In Praise Of The Copyist

Having received the thumbs-up from the band, I progressed to the next stage: preparing the score for the copyist. The copyist is the person responsible for setting your arrangement down on paper in such a way that it can be easily and accurately sight-read by the players. It's a highly skilled profession, currently compromised by the fact that having purchased a music notation program, some musicians choose to dispense with the copyist's services and generate their own parts and scores. While I would encourage everyone to learn this valuable skill, it's not something you can master



Diagram 7: The Logic-generated score of the 'Truenorth' string arrangement extract.

overnight, and doing it badly can result in confusion and delays in the studio while everyone tries to figure out how to rectify mistakes, typos and confusing instructions in their parts.

You might think that, due to computerisation, such errors are a thing of the past. If so, think again. Unlike the old pen-and-paper method, a slip of a hand can move an on-screen note without you noticing, so it's all too easy for mistakes to creep in. To make matters worse, proof-reading a part on screen is (for some reason) more difficult than on paper. I usually give my copyist three elements to work with: a Logic song containing my score of the arrangement, a MIDI file of the score with the different instruments correctly channelised, and an MP3 mix of the demo strings and backing track. It should be a foolproof system, but

Top-notch sample libraries such as LA Scoring Strings, amongst others, can be incredibly useful in preparing the arrangement, even if the end result will be a recording of real musicians.

accidents have happened, which is why I always personally proof-read the parts before going into the studio.

As I use Logic Pro to sequence my mock-ups, I've found it convenient to use its notation facilities to generate an initial score, but I have to say that although Logic is great for sequencing (which it was originally designed for), it's not so clever at creating scores. It's possible to get decent results, but because the Logic score editor is linked inextricably to the MIDI notes, it often feels as though the program is trying to prevent you from putting symbols where you want them on the page — for example, if you try to slightly re-align a note, it will often snap to a new, incorrect rhythmic position. Inserting phrase marks, crescendi, and so on, is also unpredictable. For this reason, I tend to keep my Logic score fairly basic, and leave it to copyists (who use dedicated notation programs such as Sibelius) to create the final score.

Score Draw

A good copyist will understand what's going on in the music and make



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intelligent decisions about how best to present it in score and part form. Even so, you should always try to generate a clean, intelligible score yourself, whether it be in electronic or hand-written form.

A good rule of thumb is to try to keep the page as uncluttered as possible. To that end, when notating flats and sharps (aka ‘accidentals’), it’s advisable to use a key signature at the start of a passage rather than writing in each accidental as it occurs, as that will reduce the amount of symbols on the page and simplify the overall look of the score.

However, when notating music that changes key frequently, there is sometimes no option but to write in individual sharps and flats. The cardinal

rule is *never* to mix up sharps and flats within the same bar, and particularly not in the same chord. As it happens, the musical extract I’ve featured here is constructed on the all-white-note scale of A-minor (sometimes referred to as the ‘Aeolian mode’) so no flats or sharps are needed!

The full score of the ‘Truenorth’ strings extract is shown in diagram 7. If you’d like to hear the arrangement performed by real players, check out No-man’s MySpace page — the last time I looked, it was up there in a special strings-only mix. If you’re sensing a whiff of corruption here (and who could blame you, in these days of political cash-for-access scandals!), rest assured that I receive no financial

benefit from sales of the album: with the possible exception of top guys like Quincy Jones, we arrangers don’t get a share of royalties!

In Conclusion...

What I’ve described above is a fairly uncomplicated string arrangement, based largely on chord pads, for a short section of an atmospheric, subtle, quiet ballad. It adds colour, size, and harmonic, melodic and dynamic movement to the track without dominating it, and so falls into the category of what I would call a supportive arrangement. Next month, I’ll show you some extracts from string arrangements of a more rhythmic, assertive and transformative nature, discuss the samples required to demo them, and also talk you through the various stages of preparing for a strings recording session. **////**

*‘Truenorth’ (Bowness/Wilson) is from the 2008 album *Schoolyard Ghosts* by No-man. Thanks to the composers for permission to use extracts.*

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