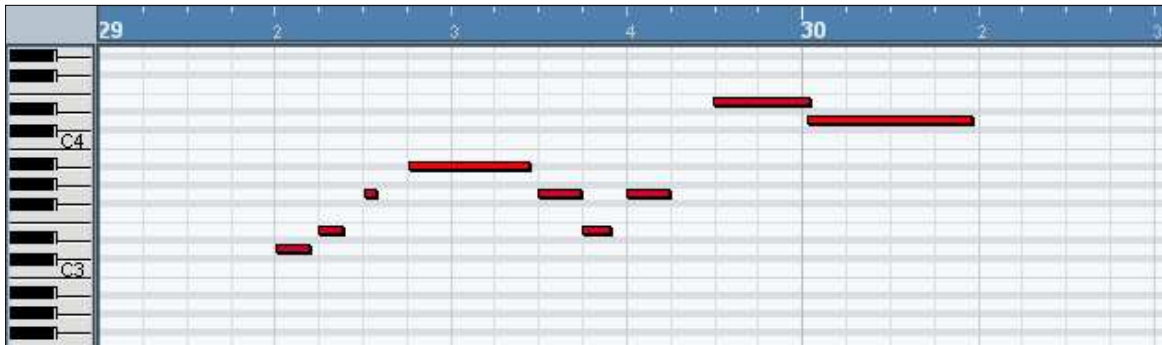


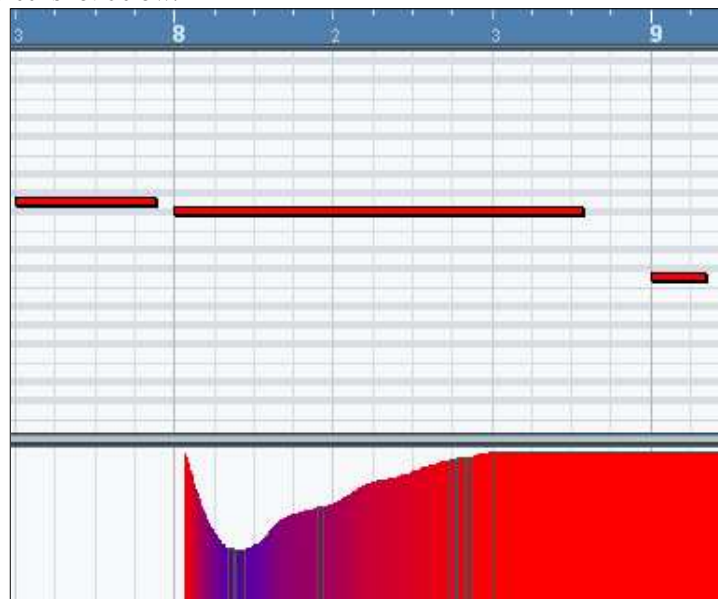
Sequencing Log (Chicken)

- To enter the pitch and rhythm data into the computer I used a mixture of a MIDI keyboard and using the mouse to enter the notes by clicking on a grid at the onset of the note (indicated by bar numbers at the top of the screen) and at the right pitch (indicated by a virtual keyboard on the left-hand side) and dragging the note to reach the desired length, according to what was written on the score. An example of this is shown below.



When I used the keyboard, I played in the notes as written in the score using real-time keyboard techniques such as hitting the notes harder for increased velocity and holding down notes for varying lengths of time according to the individual note lengths. I then edited any notes which were inaccurate in length, onset or pitch. In order to verify that the notes which I was inputting were correct, I regularly compared the composition as a whole and individual parts to a previously recorded version of the song, as performed by a big band. The pitch-bends in the bass and brass parts were inputted by changing the pitch-bend data for each track which it appeared on. I put in the drum parts using a mouse and put in the notes using step-time. I improvised the drum fills and drum solo before the funk section, and improvised the whole drum section in the funk section based around what was written in the score.

- (a) I controlled the dynamics of the piece using a variety of techniques: primarily by using velocity to define the impact of individual notes, and changing the volume of each track according to the dynamics of the instrument and section of the piece. The velocity was used to distinguish between notes on stressed beats of the bar and unstressed notes, and to emphasise accented notes. Changing the main volume was particularly useful for the crescendos and the longer notes on which I put on the series of dynamics: accent -> piano -> crescendo, as is often found in this genre of music. This is shown in the screenshot below.



I also placed emphasis using both high velocity and high main volume on the accented notes containing the ^ symbol.

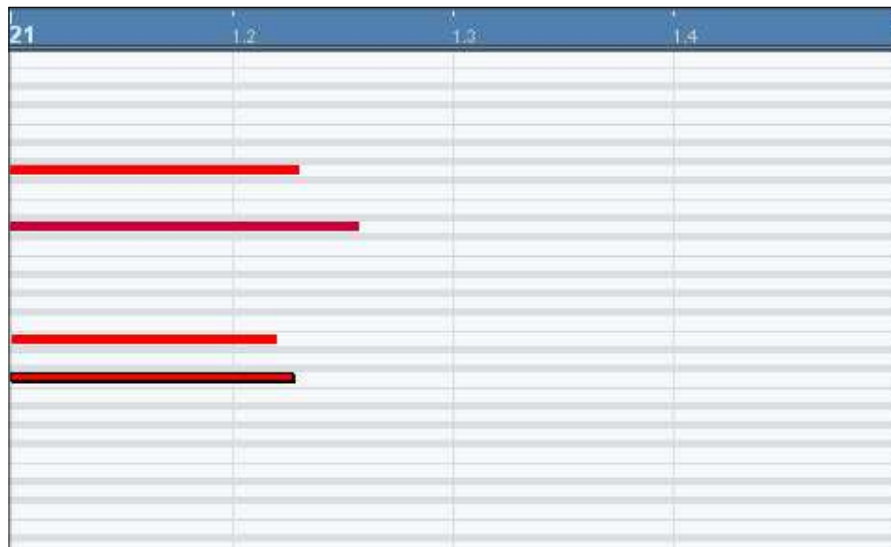
(b) When editing the tempo of the piece I took into account three major points: the change in tempo between the first and second halves of the piece; the ritardando before the end of the first piece; and the fact that human musicians almost never play at an exactly constant speed. I tackled the first problem, the major change in tempo, by opening the project browser ("Project" -> "Browser"), finding "Tempo Track" on the left-hand column and adding an entry which changed the tempo from its original value of 98 bpm to 104 bpm. I then entered in the ritardando at bar 20 (correlating to bar 19 of the score) using the tempo track ("Project" -> "Tempo Track") and drawing a downward-sloping line in order to create a decrescendo, as shown in the screenshot below.



For realism, I used the tempo track again to change the tempo slightly to reflect a common musicians' tendency to slow down slightly during sections with quiet or long-held notes, and to slightly speed up during sections with loud or short notes. These tempo changes are insignificant, with a change of no more than about 1.5 bpm, and although it makes no instantly recognisable change, I believe that it does make the piece sound subtly more realistic and reflective of real musicians.

(c) The articulation of the notes was a feature which I put particular focus on. My first concern was the accurate input of notes and note lengths, and although I used a MIDI keyboard to input the piano part and some of the saxophone and trumpet parts, I inputted some of them with a mouse. For this reason, I edited each track to ensure that staccato notes were played staccato, and that the velocity of the notes reflected their rhythmic positions and any stress (e.g. sforzando) which the notes held. To do this, I edited the velocity data for each individual note on each track in order to give it a more musical feel. However, another problem regarding articulation which I faced with inputting the notes with the mouse was that the notes were quantised and therefore, of the tracks which I entered using a mouse, all of the similar ones had notes starting at exactly the same time. Although this was accurate according to the score, it did not sound realistic, and therefore I went through each track and changed the onset time and duration of each of the notes by a few 'ticks', and in some cases significantly changed the duration of the note to make it sound less monotonous. This is demonstrated in the screenshot below, which shows highly zoomed note data from four tracks simultaneously: the notes begin and end at slightly different times and, although normally it is an inaudible difference, overall

it makes the piece sound much less mechanical.

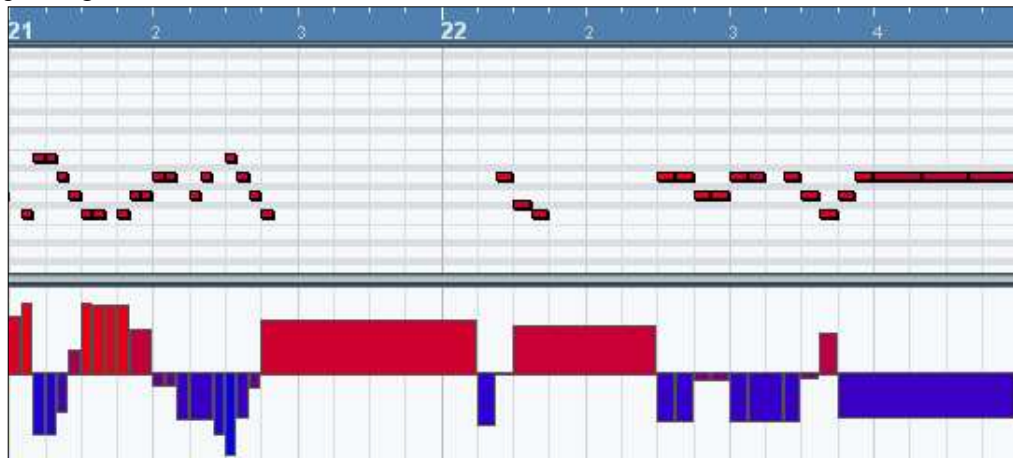


(d) I based the phrasing of the piece on the fact that players of instruments which require an outward flow of air from the lungs (i.e. saxophones, trumpets, trombones) need to be able to breathe. For this reason, short breath-lengthed periods of silence were put in after sections which had long notes, and in sections where no other gaps were. I also shortened the notes to create gaps where commas (,) appeared above the staves. To establish the starts and ends of phrases I also made use of velocity, where there was a sort of heirarchy in the amount of velocity: the first beat of the bar had more velocity than the others, and in 4/4 time the 3rd beat had more than the 2nd and 4th, but in 3/4 time the 2nd and 3rd beats carried a roughly equal amount of velocity. None of this was done 100% accurately, however, due to my focus on naturalism: the inaccuracies and inconsistencies of human players would not allow for each note to be played at an equal velocity. Where there were pauses in the score, namely at bars 21 and 22 (bars 22 and 23 in the Cubase file), I added 3 beats on to the bar using the "Signature Track" (see screenshot below) to allow for the pause. I could have done this by slowing down the tempo, but I wanted to elongate the drum solo during the pause, so changing the tempo would have been impractical.



(e) For balance, I used panning (primarily) and also main volume to make it sound as if the instruments were being played from different positions. I panned the saxophones slightly to the right, as if that was their position; the trumpets were panned to the left so that they counterbalanced the saxophones, which is mostly evident in bars 33-37 (34-38 in the Cubase file) where the music has a call-and-answer-type phrasing. The trombones had an overall lower main volume and were panned centrally (between -3 and +2), as if they were behind the saxophones and trumpets but directly in front of the listener. The drums were positioned behind the trombones by giving them a lower main volume and a panning of 0, and the bass and piano are situated to the right and left of the set-up, respectively. I used an effect on the tom-tom drums of the drum kit, whereby each tom was

panned differently in relation to its pitch: high tom-toms were panned towards the left ear, and low tom-toms were panned towards the right. This gave the effect, particularly in the drum solo, of 'going around the drumkit' when different tom-toms played in succession. I did this by adjusting the panning data as shown in the screenshot below.



(f) I chose the virtual instruments from a Cubase plug-in called VSC (*Virtual Sound Canvas*) which uses digitalised sounds of a variety of instruments. For the most part, I chose instruments based on what they were listed as on the score: i.e. the alto saxophones, the tenor saxophones, the baritone saxophone, the trumpets, the trombones and the drumkit. For the instruments where there was a choice of sounds, I chose the ones which sounded like they belonged in the big band. I used the standard piano sound for the piano and the slap bass sound for the bass guitar: although it would not realistically be slapped, the sound of the slap bass had a much more crisp and hard-hitting onset and attack on the notes such that it could have been picked as much as slapped, and the sound of it fitted my vision of what it should sound like, so I kept it. I increased the reverb on most of the parts to give the piece a more substantial feel, particularly on the drumkit, and also to make the piece sound more dynamic. These are illustrated in the following screenshot.



4. I believe that my finished sequence functions well as a musical performance for several reasons.

Aside from the accurate input of notes which were a basic requirement for the piece to sound like the real thing, the primary features of the piece which make it sound musical are the dynamics and articulation of the notes, which I tried to make sound realistic in several ways, based on the techniques used to play the instruments and human factors taken into account.

For example, I dequantified the notes to make it sound less robotic, varied the velocities of each note to make it sound more realistic, periodically changed the tempo by a slight amount in order to reflect what humans may play the piece like and changed the main volume according to the dynamics of the piece. Such (deliberate) imperfections, in my opinion, make the piece sound more human and less digital, making it sound more like a performance than a MIDI playback, however I could have improved this further by implementing features such as a sustain pedal on the piano and dequantisation of the drum part.

Another feature which I used was the use of stereo panning, which I think helped the piece sound more like a musical performance because it established the positions of the musicians relative to the listener, therefore making the piece sound yet more like a performance than a computerised playback.

However, one problem I have encountered is that the amount of control data (i.e. main volume changes, pitch bends, velocity changes, variations in note start points and lengths, etc.) can have negative effects if the processing speed of the computer the piece is being played on is not high enough. Towards the end of my composition process I found that after the pitch bends in the second half of the song, some of the notes remained permanently detuned, making it sound very dissonant, if played from the beginning, but if played from *after* the pitch-bends themselves, or played only 5 or 6 tracks at a time, there was no such detuning, showing that there are no actual errors in the input. However, I solved this problem by substituting a heavier use of note velocity for less main volume variation, and this freed up more computer processing speed in order for the pitch bends to work.