

Into the Arc: Some Sound Advice

by Mike Williams

One of the more neglected areas of the Archimedes, certainly by many newcomers to computing, is that of sound. The desktop environment, with its windows controlled by the mouse, can be so engrossing that some of the other capabilities of your system can be easily overlooked. However, in this month's *Into the Arc* we are not going to examine sound and music in a major way - that needs more sophisticated software and hardware than is supplied as standard, though it can be done. Instead we will have a look at some of the options and possibilities for the average Arc user.

The Archimedes range has quite a sophisticated sound system providing eight separate channels of stereo sound. However, many users are often disappointed with their first exposure to the Arc's sound system. A major factor in this is that the built-in speaker is quite small, and hence limited in its output; and a single speaker, of course, loses any possibility of producing stereo sound. To get round this limitation, the computer is provided with a miniature stereo jack socket at the rear. It is usually possible to plug in any set of headphones provided with personal stereo cassette players, and this will immediately enhance the range and quality of the sound which you hear.

It is also perfectly feasible to use the same jack socket to connect the sound output from the Archimedes into any hi-fi stereo system (via an amplifier), and play the computer's sound output through your usual stereo speakers (though some care may be needed to match the low-

impedance high-level output to the high impedance and low level of most line inputs). This can be very effective where music is concerned

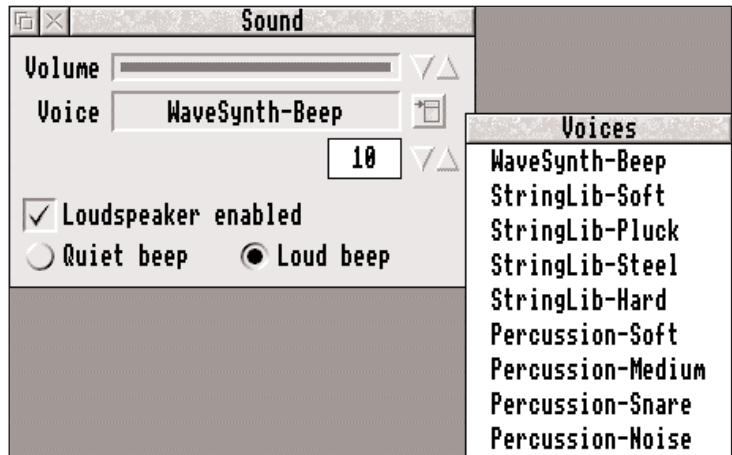


Figure 1. Configuring sound with RISC OS 3.1, showing the standard voices available

(using the supplied Maestro application for example), but is more than is needed for what we are going to cover in this article. However, a set of personal headphones will be helpful.

Some Basic Sound Information

The Archimedes range controls the kind of sound which you hear through the use of what are called Voices. Putting it fairly simply, each voice has various characteristics which determine not only its pitch (whether it is a high or low note) and its volume, but how long the sound should last and how parameters like pitch and volume should vary over the duration of the sound. The latter is important to recreate effects such

as the Doppler effect - the change in pitch of a police car siren as it speeds past you, for example. The same effects could be created as a voice on the computer.

Much more complex examples of sounds can be found in the many games available, often including synthesised music in some form or another. It is also worthwhile digressing here to refer to an alternative way of reproducing sound through a computer, which is to use digitised sound. What this means is that original sound, however generated, can be fed electronically into the computer and stored in a digital format. You may come across references to sound samples which are examples of the same thing.

Digitising sound in the first instance usually involves additional hardware, but once digitised can be played on any system with suitable software.

To appreciate the difference between the use of voices generated within the computer and sound digitised from an external source, consider a simple sine wave note, as would be produced by a tuning fork. As a voice this would be very simple to produce as it is a simple note of a constant pitch, and thus the definition of the voice would need little memory. The digitised version of the tuning fork would not benefit at all from the simplicity of the note as every minute snippet of the sound over a period of time would be digitised and store

Investigating Sound - Configure

There are two ways in which you can experiment with and investigate the sound capabilities of your machine without too much technical knowledge. You may already have looked at both of these in the past when you first acquired your machine, but it will be informative to cover both of them here.

The Configure application has a section on sound (see figure 1). What this does is to allow you to choose which voice is to be used by the computer as a beep (usually a warning signal that something you tried doesn't or won't work). You can also control

pretty awful, to my ears anyway, and I usually return to the default WaveSynth-Beep with a feeling of relief. If you are using the earlier version of RISC OS (as in figure 1) you might be tempted to switch the loudspeaker off altogether - my recommendation is Don't. When you spend, as I do, a lot of time looking at the keyboard, that beep is sometimes the only thing that saves a lot of wasted effort or worse. Perhaps that's why Acorn removed the option in the latest version of RISC OS - it wasn't considered good practice.

Whether applications use the same system beep or a different note of their own making depends on the application. It's fairly easy for a program to generate an alternative sound without recourse to the use of voices at all.

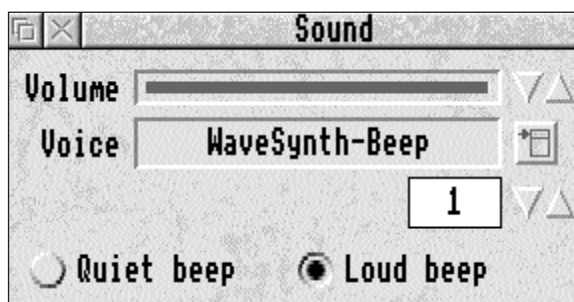


Figure 2.
The latest format for configuring sound on the Risc PC.

separately. This is not actually the whole story since samples can also be used as voices, but it does serve as an illustration of the difference between computer-generated and digitised sound.

The implication is that digitised sound can reproduce real sounds much more realistically than the use of artificial voices, but at the expense of relatively enormous quantities of disc or memory space. For example, a very short section of Elgar's Enigma Variations supplied as a Replay file with the Risc PC takes nearly 2Mb of disc space (and that's compressed anyway), while a Maestro file, which uses voices, for part of Handel's Messiah occupies just 1661 bytes!

the loudness of the beep. There is a very similar facility under RISC OS 3.5 on the Risc PC (see figure 2) but you will notice that one option, to switch the loudspeaker off altogether, has been removed. Otherwise, the two are identical as regards function and choice of voice.

If you click with the Select button over the menu prompt, a list of available voices will be displayed with weird and wonderful names, as you can see. Every time you select a different voice from the list its corresponding sound will be heard. So set the volume to maximum, select a loud beep and use this facility to try out each of the voices in turn. As they stand, most of them sound

Investigating Sound - Maestro

The Maestro application has been supplied by Acorn with the Archimedes since its launch back in 1987. Maestro has been updated since, but has generally stood the test of time well. However, commercially available software nowadays provides many more facilities and sophistication, and is essential for the more serious music user (some examples are Serenade and Rhapsody from Clares, Sibelius from Sibelius Software and Notate from Longman Logotron).

Maestro is normally supplied on the applications disc by Acorn (disc 2 if you have two), or ready installed on your hard disc. Maestro is loaded by double-clicking on its icon in a Filer window, and Maestro files can be loaded by double-clicking on the file icon, or dragging the Maestro file to the Maestro icon on the icon bar. Whichever way is selected, a window will appear showing the opening bars of the selected piece of music (see figure 3). A number

of sample Maestro files are supplied by Acorn, and others have been published on the RISC User magazine disc over the years. You may also find sources of Maestro files in Public Domain libraries.

Before playing any piece just click with the Menu button over the Maestro window, and from the quite extensive range of options revealed slide right across Instruments. The resulting window shows how the eight available channels are being used, in most cases four channels per musical stave. In each case it shows the voice selected per channel, the volume (expressed in musical terms, so f for forte is loud, fff loudest of all), and the stereo position. Clicking with Select or Adjust over any of these entries allows you to cycle through the choices available, and you'll see that all the voices are just the same as those we saw with the Configure application - Maestro adds no other voices of its own.

To play any Maestro tune, simply click on the Play option in the main menu; to stop the music playing click on the same option again (which is shown ticked when music is playing). Once playing, you can close the Maestro window, but leave the application on the icon bar. Those somewhat gruesome sounding voices sound more pleasant to the ear when utilised within a proper musical composition, and generally lend themselves reasonably well to older musical compositions where there is some similarity to the sound of the harpsichord.

Maestro allows you to do much more than just play the supplied tunes. It can be used as a real musical editor, and scores can be printed out as well. For our purposes, it will probably suffice just to experiment with the tunes supplied, working through the

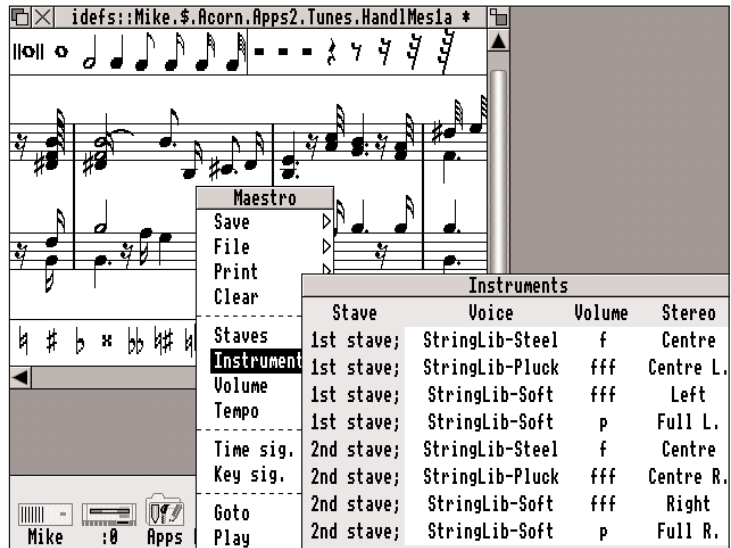


Figure 3.
Example tune (from Handel's Messiah) loaded into Maestro showing main menu and choice of instruments.

various menu options.

Simple Sound Programming

If you are into writing your own programs in Basic, it is not too difficult to use sound as well. There are a number of star commands you will need to familiarise yourself with, and a number of equivalent Basic instructions. These enable you to assign a voice to a channel, determine stereo positioning, tempo and volume, and produce a sound for a specified duration. At one time these were covered quite adequately in the User Guide, but these days you will need recourse to the RISC OS Basic Guide or the Programmer's Reference Manual, or if these are too technical for you, one of the books on the market that covers Basic programming.

Pepping up your System's Sound

As we have seen, the built-in voices are a little unexciting, with few distinguishing features in some

cases. However other voice modules are around, and indeed some Public Domain libraries may provide collections of voices. Other software, particularly games software, may also contain voice modules which once located on disc can be loaded separately to increase the range of voices available on your system. Have a look in an application's own directory, by Shift double-clicking over its icon in a Filer window, or explore any other directories you can find on disc. A module can be identified by its icon, containing the letters RM in cyan on dark blue, with the Archimedes A bottom right. However, not all modules are voice modules. To check, double-click on the module icon, and then use the Sound section of Configure to check if a new name appears in the list of available voices. Copying any voice modules you find elsewhere on your system is perfectly legal, though you should not distribute or give away to others anything which is copyright.

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