

## **DAWN - Digital Audio Workstation Nucleus:**

### **Introduction:**

Looking for a hard disk audio recording/editing system? Maybe you have been considering an AMS Audiofile, or something similar - but you don't like the price, or the unattractive user interface on the AMS unit. However, you probably do like the super-friendly user-interface implemented on most Macintosh software, and there is a new system available from SYCO Systems here in the UK, called DAWN, which uses the Macintosh as its 'front-end' - so let's check it out!

Essentially, DAWN is a post-production 'tool' which lets you 'spot' audio effects and position them to picture. I am told that DAWN is being used extensively in Los Angeles for post-production - for sync dialogue, location sound, and for 'checkerboarding' with overlapping audio tracks to allow crossfades. It is also being used for film sound in LA by studios such as 'Digital Sound and Picture', and 'Tesla Communications', and by freelance dubbing engineers such as 'Chuck Everts Sound'. As a layback device it is suitable for assembling up to eight tracks which could be mixed down to mono for a standard TV broadcast, although you may start to run short of tracks for stereo TV. As we will see, unlike some of its competitors, DAWN offers true track slipping in Mix view, where you just drag stuff up and down in the window - nothing could be more intuitive! The computer and software cost about £10,000, and you will need to buy suitable disk storage devices and Midi/SMPTE interfaces. So, for under £15,000 you can easily put together an 8-track post-production system, using DAWN.

### **Overview:**

The DAWN system is the first truly multitrack hard disk audio system for the Macintosh, offering eight separate tracks, each with a separate output. Although other systems such as Sound Tools and Dyaxis do offer internal multitracking, everything has to exit via two audio outputs, or four in the case of the Dyaxis 2+2 System. DAWN can have four analogue inputs, or two analogue and two digital, or just two analogue - whichever best suits your needs. Outputs include AES/EBU and S/PDIF which are software selectable, using XLR connectors, and there are three selectable sampling rates - 44.1kHz, 48kHz, or 96kHz.

A Macintosh computer is used as the 'front-end' to a 19" rackmounted Signal Processing Unit, with connections to the rack via both Midi and SCSI. There is a matching Sound Storage Unit which can hold a hard disk and a backup system - such as DAT. As the system does not use any nuBus cards (which can only be used with the Macintosh II series computers), it is possible to use the new low-cost Macs as controllers, although a large screen is highly recommended. You will usually need two Midi interfaces, one for the Modem port to handle any incoming Midi and MTC, and one for the printer port - which carries the levels for the on-screen meters back to the Macintosh. A SMPTE to MTC converter is required as well, and the UK distributors recommend a Mark of the Unicorn

Midi Timepiece (with LTC) or the Video Timepiece (with VITC), with any other Mac Midi interface for the printer port.

There are three basic windows provided by the software. These are (in the order in which you would probably use them) the Main View containing the Edit Decision List and the Command Palette; the Edit window; and the Mix view. You assemble your original sound files in the EDL, and then use the Edit window to top'n'tail your recordings. Finally, you call up the Mix view showing eight tracks which scroll vertically upwards as you play. The Macintosh keypad can be used to control the various functions in these windows, as an alternative to the mouse, for those who prefer this way of working.

### **DAWN in Action:**

Basically, you want to record your music cue, edit it, then position it to SMPTE. You may wish to enter in your 'hit' points first, however, and 'capturing' time code locations from a VCR proved to be very easy with DAWN. You just click on the capture button, and the time code value present at the precise moment the mouse button goes down is copied immediately into the "Time In" field of the selected sound.

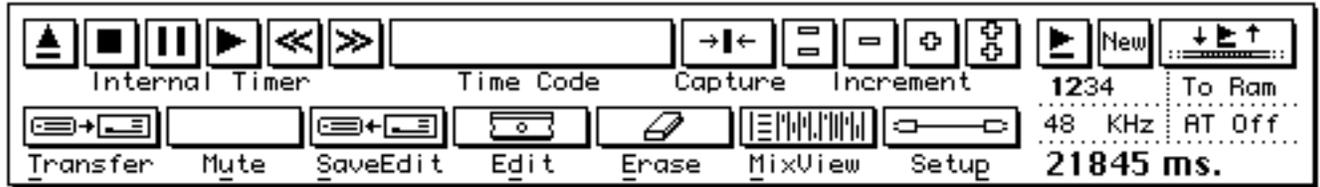
To set up to record you would typically select an appropriate SMPTE frame rate; choose an appropriate sampling rate; select "Record On" and check the channel(s) to which you wish to record; and select "To Disk/To Ram" to toggle between Ram mode and direct to hard disk mode. Unusually, for this type of software, you have to set the recording's duration before recording. According to Doremi Labs, this is necessary to avoid file-fragmentation. A DAWN Mix uses eight files each containing a mono track, whereas Sound Tools, for instance, uses interleaved SDII stereo files, and offers the option to only use contiguous disk space. Studio Vision uses separate mono SDII files, but allows you to 'compact' your files after recording and editing, to get round the problem. Of course, you can always set the duration to the maximum your hard disk space will allow, and cut any unused part once you finish your take.

You can optionally record to RAM instead of to hard disk, and here you can reverse or loop the sound - then transfer the audio to a hard disk file when you are happy. You can also play back your audio cues from a Midi keyboard in Midi Keys mode. So DAWN could effectively be used as a sampler with a very large recording capacity! I also found a very useful Menu command to use with samples in DAWN: the **Set Audio Trigger** command lets you configure DAWN such that an audio signal coming in on channel 1 will act as though it were a Midi Note On/Velocity message. You can then arrange for this incoming message to trigger a sound mapped to that Midi Note Number. You could use this to replace an existing audio recording of a snare drum on tape with a new sampled snare in DAWN, for instance!

### **The Main View Window:**

The main view has two sections - the **Edit Decision List (EDL)**, and the **Command Palette**.

### The Command Palette.



The upper part of the Command Palette is used to control the internal timer, with the right part used for recording functions, and the lower part used to let you to perform various commands. In order to execute a command, you can either click on its icon, or you can type the letter of the command name that is underlined. I found the layout of this palette to be a little confusing at first, and would have preferred to see a much clearer distinction between the recording and timer controls, for instance.

Three icons at the top right control recording, with various other recording parameters displayed below. When you click on "New", Dawn attempts to allocate a space on the disk for recording, and then goes into a standby mode - where it is ready and waiting to record. The "Record" button activates the record mode, and DAWN will stop recording by itself at the end of the duration value that you have entered - or you can stop the recording at any time by clicking once more.

You use the Transfer command button to open up existing sound files, audition them, and load them either to RAM or to the DAWN hard disk. Each sound file you load occupies one line in the list. Other buttons let you mute any of these sounds, or save a copy of a selected sound from its Edit start to its Edit End using the SaveEdit command, or erase the selected sound from the sound list. A click on the "Set-up" button will open a window where you can set the SMPTE frame rate, the Midi interface clock rate, and the Midi channel. Finally, the "Edit" button opens the editing window for the selected sound, and the "Mix" button opens the mixing window - both of which we will take a look at later on.

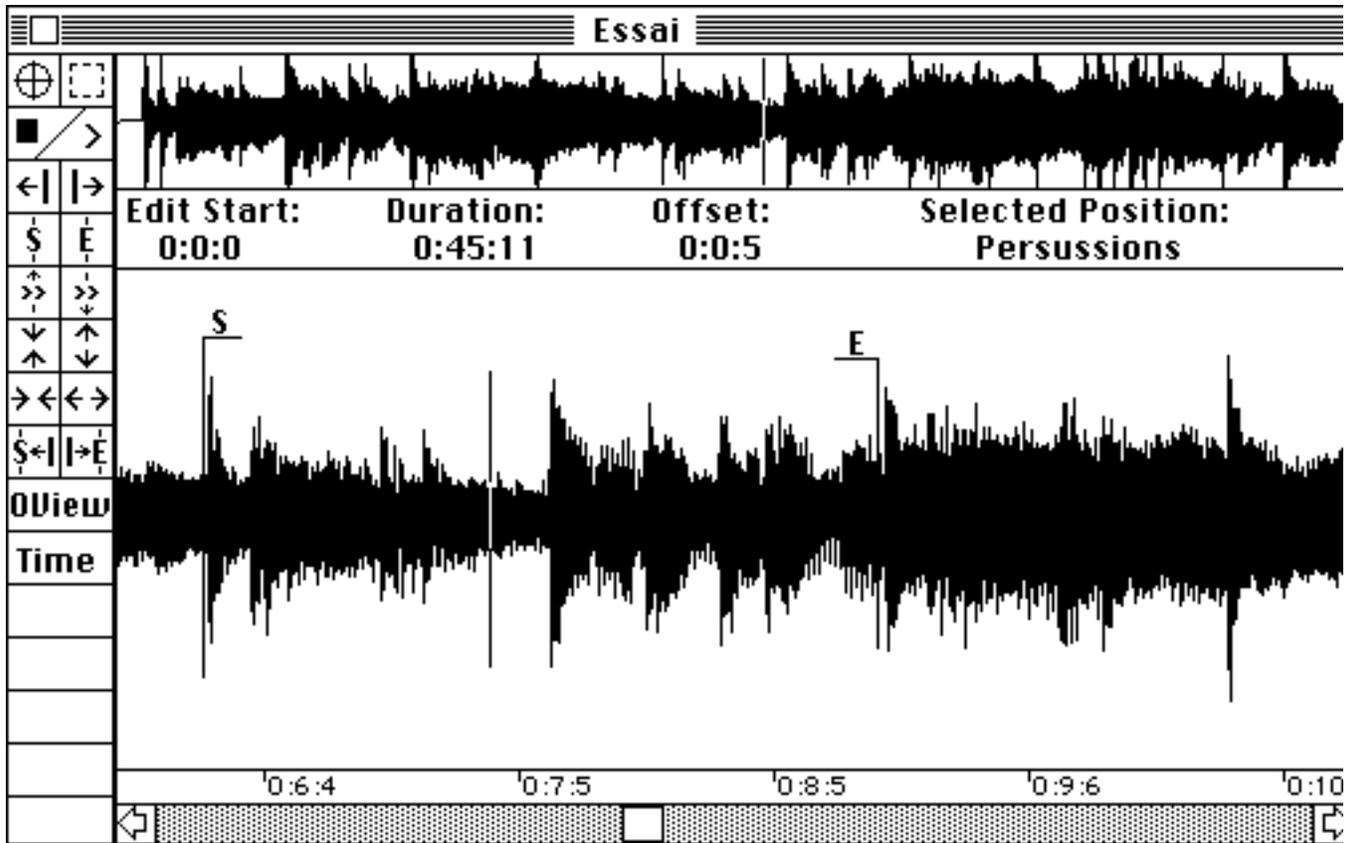
### The Sound List Window (EDL).

Essai						
SoundName	SubName	Time In	Time Out	Position	Velocity	Track
HoldMe.R	● F.Mac	01:00:01:10:2	01:00:08:21:	C0	105	1
HoldMe.L	● F.Mac	01:00:01:10:2	01:00:08:21:	C0	105	2
spyro.R	● Gyra	01:00:08:28:0	01:00:22:05:	C1	105	1
spyro.L	● Gyra	01:00:08:28:0	01:00:22:05:	C1	105	2
TakeIt	● Winwood	01:00:22:20:0	01:00:31:20:	C2	105	1
HLove	● Winwood	01:00:26:20:0	01:00:31:14:	C3	105	2
GatedTom.R	f firstOne	01:01:00:00:0	01:01:00:05:	G-2	105	1
GatedTom.L	f firstOne	01:01:00:00:0	01:01:00:05:	G-2	105	2
GatedTom.R	f SecOne	01:01:05:00:0	01:01:05:05:	A-2	105	1
GatedTom.L	f SecOne	01:01:05:00:0	01:01:05:05:	A-2	105	2
SlowAttack	f Ambience	01:01:07:00:0	01:01:09:04:	E-2	105	1
TineString	f squeek	01:01:12:00:0	01:01:14:03:	C-1	105	1

There are seven columns in the Edit Decision List, containing information about each sound. The **SoundName** column lists the original sound files, and **SubName** lists the names you have given to regions within each sound file. A region could contain the whole file, or one or more sections within a file - in which case the necessity of providing SubNames becomes obvious. A symbol to the left of the SubName indicates whether the sound is on disk, or in RAM - where it may be in forward or backward play mode, or looped. The **Time In** field shows the time at which the sound will be triggered when synchronized with SMPTE-MTC or with the internal clock of the Dawn application, and the **Time out** field shows the time at which the sound will stop.

If the Dawn unit is used in a MIDI environment, the **Position** field shows the mapping of the sound on a standard MIDI keyboard. In this Mapping Mode, the position field displays three MIDI keys - one each for the original pitch, and for both upper and lower pitches playable. Alternatively, you can use the Key Numbers Mode, where this field simply shows one value assigned to the sound, displayed either as a note name, or as a Midi Note Number. The **Velocity** parameter (which you can adjust using a popup fader) is used to control the output level of the sound - just as velocity values can be used in a similar way with Midi sound sources. Finally, the **Track** field shows the output which is used for the sound.

### The Editing Window:



You can open an Edit Window for any selected sound in the EDL by clicking on the Edit button on the Command Palette. There is an overview window along the top with the main edit window below, which is very useful if you want to see the entire sound file at any time. One click anywhere in this overview will scroll the main editing view to the position where you have clicked. The scale at the bottom of the view shows the horizontal coordinates in the commonly-used Minutes:Seconds:Frames format. Editing with the Dawn unit typically starts with you defining a "Start Marker" and an "End Marker" for a region within the sound file.

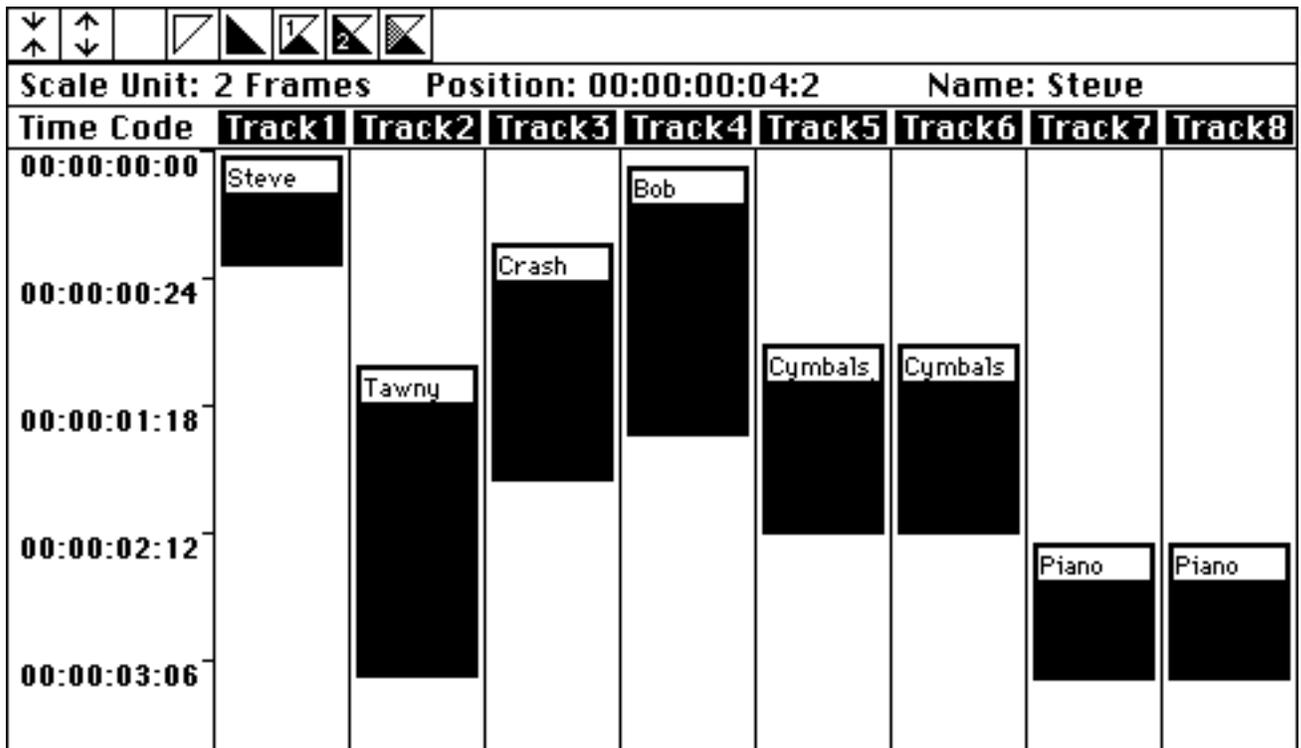
There are two basic Edit modes - Dawn Mode and Selection Mode - each selected by clicking on the appropriate icon at the top of the Edit Palette. In the "Select Mode", you just click and drag the mouse to select any part of the waveform for editing. It is also possible to define multiple start and end markers in the same sound file, so that you can arrange different sections of the same sound file later on in the Mix Window. In the Dawn mode, if you press the mouse down near the cursor position, you will enter the scrub mode. Here you can move the mouse to the right or left to play forwards or backwards. This scrub feature works quite well in DAWN - a little better than in Sound Tools, but not quite as good as in Dyaxis, in my opinion.

You can adjust the size of the waveform display by a factor of 2 in either direction vertically or horizontally, using a pair of Zoom icons. The "Forward" and "Backward" icons let you play the selected sound at a pre-defined speed,

from the cursor's current position to the end or to the start of the sound file - or until the mouse button is released. The cursor follows the play-back in real time while this happens. Another pair of icons lets you increase or decrease the forward or backward play speeds from a maximum of twice normal speed, to a minimum of 1/8 normal speed.

All-in-all, the Edit Palette offers very comprehensive control of all the editing functions available, and allows you to access these in easy and intuitive ways. DAWN also provides various CueEdit Menu Commands to allow quick editing of a sound without going into the editing window. There are a whole series of these, to let you adjust the beginning and end times of the sound files in various useful ways - such as in 1/4 frame increments. Similarly, there are commands to set fade-ins/outs, crossfades, and splices, and to lock files so that they are not inadvertently altered.

### The Mix Window:



The Mix Window displays all the sections of sound in the Edit Decision List, allocated to the different tracks. The first two buttons at top left control the vertical scale of this view. The other five buttons let you set a Fade In or Fade Out, choose Cross-fade Sound1 and Cross-fade Sound 2, and set the cross-fade parameters. These functions can alternatively be controlled using menu commands.

The main section of the Mix Window has nine columns, with the first column, at far left, containing the Time Code scale. The eight other columns represent the eight tracks of the Dawn unit. Audio data in a track is represented by a black

rectangle, the top and bottom of which corresponds to the "Time In" and "Time Out" of the sound, respectively, and each rectangle has the sound's SubName written at the top of it. I found this to be a very good way of displaying this information, as I could easily keep track of what was going on while watching this display scroll. Transferring audio from one track to another is extremely easy - you just drag tracks horizontally, using the mouse. Similarly, you just drag vertically to change the "Time In" and "Time Out".

### **Plans for the future:**

Film/TV editors are not going to want to use a digital audio editing system particularly for the sound quality, as they are used to working at much lower bandwidths than those available from digital systems like DAWN. So the audio quality of the system is not as important as the efficiency issue! DAWN aims to be more efficient in a post-production context than using conventional audio editing methods, and the intention is to keep adding improvements to the system with this efficiency aim in mind.

The UK distributors, SYCO Systems, informed me that there are plans to allow 'Autoconforming'. Typically, this would allow you to take in an edit decision list in CMX or other format. You would then use DAWN to record and assemble this audio from the original source 'rushes'. So, you would feed the rushes into a playback VTR. The Autoconforming feature would then allow you to take control of this VTR and spool back and forward to find the required audio to record into DAWN, before continuing to look for any further sections of audio. If these later sections were not located on this first tape, the software would then prompt you to put the next reel in. A further refinement would allow the Autoconforming system to read the user bits in the timecode at the start of any new reel. If suitable information about the audio had been recorded into these user bits, you would then be able to see if there was any of the required audio on the tape, no matter whether you had written the correct information on the tape's box, or not. If this tape did not contain any of the required sections of audio, the software would inform you of this and prompt for the next reel, and so on. This feature has the potential to speed up the process of editing location sound for films or TV immensely. The only system I am aware of which offers Autoconforming at present is the AMS Audiofile, although other manufacturers are also talking about including this feature on their systems in future.

### **Feedback from a potential user:**

I spoke to Dennis Weinreich at VideoSonics - a London company who specialize in Audio-for-Video Post-Production. Dennis told me that he had taken a close look at DAWN, and was very impressed, particularly with the quality of features available for relatively low cost. Dennis currently uses the AMS Audiofile, and is very happy with this. However, he particularly liked DAWN's graphic control environment with the software version of a 'dubbing sheet'. Here he was referring to the scrolling Mix window which, as Dennis explained, is very 'in-tune' with the way dubbing editors actually work. Asked to qualify this, Dennis continued: "Film dubbing charts are always arranged running from the top of

the page to the bottom, with some indication of feet/frames, or other suitable scaling, to the left, and with a script column to display instructions about the audio. In the DAWN system, this dubbing sheet emulation is also the control 'surface' which you work with to effect your edits." So how about PC-based hard disk recording systems as opposed to stand-alone units? "I do have one major reservation about using personal-computer-based recording equipment. I feel that the fact that the engineer has to focus a fair bit of attention on the computer screen and keyboard may distract from his keeping an eye on the action on the video screen. This could lead to 'user-fatigue' more easily than when working with dedicated hard disk recorders like Audiofile." So would you buy one? "Well, you can buy five DAWN systems for the price of one DAR Soundstation. DAWN is a '1-trick pony', in the sense that it is great for cutting up audio and laying it to picture, although it doesn't offer the wider range of features which some of its more expensive competitors provide. Despite my previous reservations about PC-based systems, I know that I could get very comfortable with an 8-track post-production tool on offer at the kind of price DAWN sells for. As soon as a suitable new project comes along, I will almost certainly buy a system to use here at Videosonics."

### **Conclusions:**

So what did I like about DAWN? Mainly the fact that you could have access to 8 separate tracks for playback, a reasonably well-designed user interface, and a very useable mix window which is particularly good for laying up sound effects, dialogue, and music tracks to picture - all for a reasonable price! It was also interesting that you could play back sounds from Midi - so you could use it effectively as a large-capacity Midi sampler!

However, there do seem to be a few bugs in the system. During the two demonstrations I attended at SYCO, there were various inexplicable crashes. I also think that the general speed of operation could be improved on. It does seem to take a couple of seconds or so to sync up once you hit play and the video starts rolling, for instance. The user interface is OK, and I did particularly like the vertically scrolling Mix Window. The Scrub function works quite well, but the manual ranks among very the worst that I have seen. There is no clear overview of the system and how it works, no examples of how to use the system in different situations, confusion as to what the different windows are called, and so on. Also, DAWN is not currently compatible with the Apple Midi Manager, so you cannot run the control software under MultiFinder in conjunction with other Midi software or hardware installed in your Macintosh - such as the Digidesign SampleCell or MacProteus nuBus cards for the Mac II. Doremi are working to implement Midi Manager compatibility at the time of writing, and hope to offer this feature by the end of May 1991.

There have been hints that Studer will develop the Dyaxis system into a multitrack version, and there are very strong indications that Digidesign are about to market a professional multitrack version of Sound Tools for the Mac. DAWN is there first with this new multitrack system, but time will tell as to which system becomes the more widely adopted. For now, DAWN is the only

truly multitrack system available for the Macintosh, although it has competition from a variety of other systems which are available as stand-alone units or based on other PCs. Compared with the price of the AMS Audiofile, Lexicon Opus, Synclavier Direct-To Disk, or other such equipment, the DAWN system offers very good value for money.

So, if you are looking for a relatively reasonably priced 8-track hard-disk recording/editing system controlled by a Macintosh, which is available now - then DAWN could provide a good solution to your requirements. Personally, I think I will hold on to see what Digidesign come up with!

**Mike Collins © 1991**