ABOUT SOUNDSHAPER

INTRODUCTION

SOUNDSHAPER is a free sound processing and transformation package, developed in association with the **Composer's Desktop Project (CDP)**. CDP is a very comprehensive system, with around 500 processes and tools for creating, altering and manipulating sounds to make music. However, it doesn't run in real-time, so it has not been developed as a set of plug-ins for a DAW. Instead, it processes soundfiles via the command-line interface or by running a script.

Soundshaper provides a control interface for CDP, with an emphasis on speed and ease of use. It assembles a custom script for each chosen process and runs this in the background. Soundshaper supports the latest CDP Release 8.

SOUNDSHAPER (Version 6) is available only as a Windows application, although MAC users also run it successfully under 'Parallels' or similar applications. A list of what's new in version 6.0 and recent versions can be found ***here***. A more detailed description of the new features and changes in Soundshaper 6 is given in the document "Soundshaper 6: What's New", supplied with the program.

Soundshaper is a standalone program built around a very simple model:

- Choose an input sound on the **MAIN PAGE**
- Choose a process, also on the **MAIN PAGE**
- Set some parameter values for the process, on the **PARAMETER PAGE**
- Optionally edit time-varying values graphically in the **GRAPH-EDIT PAGE**
- Run the process and return to the **MAIN PAGE**

This section gives an overview of Soundshaper's layout and key concepts. The basic operation of the program is described ***here.***

MAIN PAGE

The Main Page of Soundshaper is concerned with selecting and editing sounds, selecting CDP processes, and manipulating chains of processes in the multi-process ***Patch Grid***.

CDP FILES and PROCESS MENUS

CDP is a non-real-time system which transforms (mainly) ***soundfiles***, as opposed to an incoming stream of audio. An ***infile*** (input file) is selected, a process is chosen and parameter values are set (where applicable), the process is run and the output is saved to a new (sound)file. This must have a different name, so the processing is non-destructive. CDP also processes ***frequency analysis files*** in the spectral domain and ***pitch data files*** derived from spectral files.

The main processing menus at the top of the page – **Soundfile**, **Spectral** and **Pitch** – reflect these three types of processes. **Edit and mix** functions are in a separate menu, as are **synthesis** functions. There is also an extensive **Info** menu for Information functions.

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SOUNDFILE PLAYER

As soon as a soundfile has been selected, or created after processing, it is available for playing and viewing in the ***soundfile player***. The player can also play a frequency analysis file that has been converted behind the scenes into a soundfile.

The ***transport*** buttons (playing controls) are below the centre of the soundfile display, while to the left of the display are various options for starting playback. The transport's PLAY button (green triangle) starts the playback and the file is displayed (see screenshot). If Auto-Play is checked in the Options menu, playback and display are automatic.

The player is based on the third-party **BASS audio library**. It is a looping player (though it can also play without looping) and the ***Loop Points*** are shown by the blue and yellow cursors. These are positioned by left and right mouse clicks, respectively, or by dragging. The default play-start is the left loop-point, but alternatives can be selected in the **PLAY FROM** box.

Soundshaper also supports up to 100 ***Markers*** (cue points). These are displayed a pair at a time in the edit boxes to the right of the transport buttons. Markers can be typed in, saved to file, loaded from file or imported from an external editor such as Audacity, got from Loop points (Get Loops button), or the Play-Cursor point. They can also be used to set the Loop Points (Set Loops button). Additionally, on the Parameter Page, Marker times can be exchanged with times in data files (see Time-Varying values below).

PROCESS OPTIONS

To the right of the soundfile display are three options for processing, either:

- **the whole file**
- **the segment between loop points**
- **the segment between markers, if any**

CDP always processes a whole file, so partial processing is achieved by cutting and pasting. Not all processes are suitable for this treatment.

PATCHGRID

The bottom half of the page is devoted to a multi-process table called the ***PATCHGRID***., with ***Patch Controls*** to the left of the grid.

Each row of the grid represents a chain of processes, usually with its own source sound, or one channel of a multi-channel sequence.
The normal progression is from left to right, as in this example:

When a source file is selected it appears in cell A_0 (or B_0, C_0 etc. if a different row has been clicked). The result of the first process then appears in A_1, which becomes the input to the second process, whose result appears in A_2, and so on:

> **A_0 (source) – A_1 (RingMod) – A_2 (Transpose) – A_3 (Repeats) – A_4 (Stack) – A_5 (Convolve) – A_6 (Loudness)**
>
> Convolve uses the source B_0 as its second input.

Each cell is the result of a CDP process and has a corresponding temporary output file in your nominated ***TEMP OUTFILES*** folder. The current cell file can be played (if suitable), re-edited, saved to a permanent file, copied to another cell, or you can get information about it from the player or the CDP Info functions.

The patchgrid is initially sized according to your saved settings, but can be re-sized during a session. The recommended default size is 16 columns and 8 rows, while the maximum supported size is 99 columns and 16 rows.

PATCHES and SUB-PATCHES

The Patchgrid structure as a whole is called a ***PATCH***. The patch stores a complete and fully editable record of the sound processing. Parameter values can be adjusted at any point, even after further processes have been run. Patches can be saved, recalled and run with different source sounds. To make this possible, Soundshaper can run virtually all CDP processes with mono, stereo or multi-channel sources.

Wherever possible, conversion between the different CDP file types takes place behind the scenes, especially between soundfile and spectral files. You simply select the next process. (See the Reference Section on **Auto-Conversion** for details.) Similarly, when two or more inputs are needed, you can usually just click on the required cell, and Soundshaper will convert the file-type if necessary.

With Soundshaper's patch system, low-level CDP functions can be built into higher units that will run with any suitable source. At the top level, when a patch is loaded, it is displayed in the patchgrid as it was constructed, and run automatically. Any individual process can then be adjusted and the patch re-run.

However, a saved patch can also be loaded and run as an object within a single cell (a ***cell-patch***) – see for example cell A_1 "blur50" in the screenshot above. And the patch containing this sub-patch can itself be saved and can become a sub-patch running within one cell. In theory, there is no limit to this hierarchy of processes, as each cell-patch is run within its own folder, which may have sub-folders containing their own sub-patches.

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PANELS

To the left of the soundfile display are a number of panels, individually selected by clicking on the panel name: **FILES, PROCESSES, PATCHES, SPARE FILE** and **SAVE FILE.**

FILES displays a user list of frequently used files or project files (also called the ***File Pool***). Similarly, ***PROCESSES*** displays favourite processes, each of which may be simply a CDP process name or your own saved settings for a particular process. ***PATCHES*** likewise is a quick means of recalling favourite patches, particularly useful if the patch is to be run in one cell.

The ***SPARE FILE*** slot is mainly for files such as text data files which are not part of the process chain and cannot appear on the patchgrid.

Finally, the ***SAVE FILE*** panel has some controls to help with saving CDP output to a permanent file.

SELECTING SOURCES

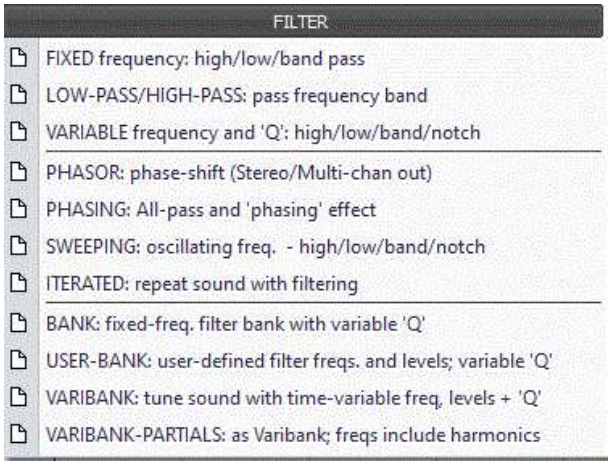
The first operation in a CDP process chain is to choose a source sound. Sources can be selected:

- via conventional file menus
- by drag+drop from an open folder
- using the 'Recent Files' list
- from the File list

The File List, or 'Pool', is a drop-down list of project soundfiles. A default 'Pool' list of files is always loaded on startup, if it exists. Pool files are simply text files, so there is no limit to the number of them you can store and recall.

SELECTING PROCESSES

Processes are most easily selected via the menus. These are based on CDP's division of functions into ***Time-Domain*** and ***Frequency-Domain***. Time-domain processes are split into separate **Edit/Mix**, **Soundfile** and **Synth** menus, while Frequency-Domain processes are divided between the **Spectral** menu and the **Pitch Data** menu, which is for operations on pitch files extracted from spectral files.



Information functions appear on the **Info** menu. These do not produce an output sound, but either produce text or a textfile report, both of which are displayed automatically.

An alternative selection method is via the ***Process Tables***, accessed at the top of each menu type or by hotkey:

PITCH	1	2	3	4	5	6	7	8
CONVERT	GETPITCH	GETPITCHBRK	PCHGEN	MAKESPEC	HEAR	VOWELS	SYNTH	PCHTOBRK
PROCESS	APPROX	CUT	EXAGG	FIX	INVERT	INTERPOLATE	QUANTIZE	RANDOM
----- ctd -----	SHIFT	SMOOTH	VIBRATO	INSERTSIL	UNPITCH	NOISETOSIL	PITCHDTOSIL	
COMBINE	PCH+PCH>TR	PCH+PCHB>TR	PCH+TR>PCH	PCH+TRB>PCH	TRTR>TR	TR+TRB>TR		
COMBINEBRK	PCH+PCH>TRB	PCH+PCHB>TRB	PCH+TR>PCHB	PCH+TRB>PCHB	TR+TR>TRB	TR+TRB>TRB		
PITCHINFO	INFO	ZEROS	PCHTOTXT	PCHSEE	TRANSEE			

The ***Process Tables*** use Soundshaper's own single-word names (***shortnames***) for CDP processes. These shortnames are also used on the patchgrid and elsewhere in Soundshaper, but they can be easily related to the official CDP name, which is displayed at the bottom right of the Main Page.

Favourite processes and patches may also be recalled using the drop-down **Process List** and **Patch List**, as mentioned above. You can store and recall any number of these selections.

SETTING PARAMETERS

Selecting a process normally leads to the ***Parameter Page***, where parameter values are chosen. Soundshaper knows the requirements of each process and its ***modes*** (where applicable) and sets up the page accordingly, displaying only the relevant parameters, with appropriate value ranges and normally a default starting value. Values can also be randomized within a chosen range.

Hitting **RENDER** (formerly the OK button) runs the process and returns to the Main Page. If the result is unsuitable, clicking the **RE-EDIT** button or double-clicking on the cell re-opens the Parameter Page, where the previous settings can be adjusted and re-run. Alternatively, either **UNDO** (Ctrl+Z) or the **DELETE** button or key clears the cell.

PREVIEWS

New in Soundshaper 6 is a preview facility on the Parameter Page, allowing you to quickly experiment with and compare different parameter settings before rendering. To run a preview with the current parameters, click the **PREVIEW** button instead of **RENDER**. The soundfile display then shows and plays the previewed result, while a preview number appears below the PREVIEW button:

The preview up/down arrows allow you to re-select an earlier or later-numbered preview and its set of parameters. 99 preview slots are currently available. Additionally, you can compare any preview with the source sound by clicking the checkbox Play Source.

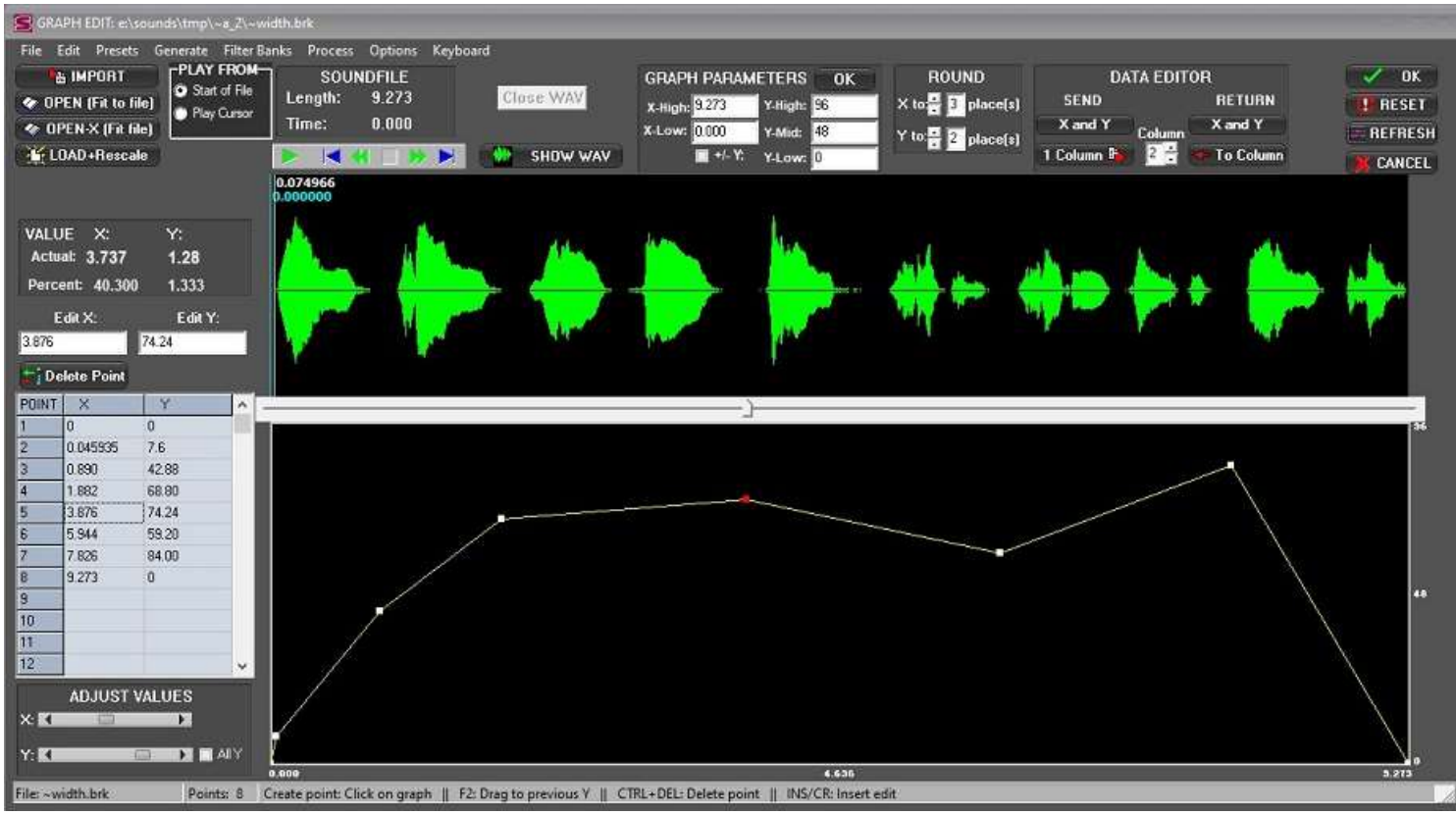
TIME-VARYING VALUES (Automation)

Many CDP parameter values can vary over time, usually over the length of the input file. Selecting **T-V** replaces a single value with the name of a text file, usually a 'breakpoint' file of time and value pairs, displayed in the ***Data Edit panel*** at the right of the Parameter Page. Time-values are optionally scaled to fit the file. Default values are recalled initially, but you can save and load your own files or drop them onto the page.

The time-varying data can be edited manually in the edit box, or sent to Soundshaper's ***Graph-Edit*** page by clicking the ***Edit button***. Additionally, time-values can be exchanged with the Markers list (**see the section MARKERS and LOOPS TO DATA FILE).**

GRAPH-EDIT

The ***Graph-Edit*** page shows the data as a breakpoint (straight-line) graph as well as in a table. New points are created by clicking on the graph area; points can be dragged around; and there are various possibilities for creating new graphs from scratch, such as an envelope shape that can be imposed on a sound.



Soundshaper knows the requirements of each type of data file and displays the data accordingly. (Some data files cannot be edited graphically – in these cases the Edit button is not shown.)

SNAPSHOTS, PRESETS and MULTIPLE PARAMETER SETS

On the Parameter Page, a set of parameters can be saved temporarily by clicking on one of the ***Snapshot buttons***. The first eight of these can also used to store ***Multiple Parameter Sets***. This feature enables a stereo or multi-channel file to have a different set of parameter values for each channel.

A parameter set can be saved permanently as a text file (**.prm**). These files can be loaded or dropped onto the Main or Parameter Page, recalled from the Main Page ***Process List***, or they can be added to a ***Preset Collection***.

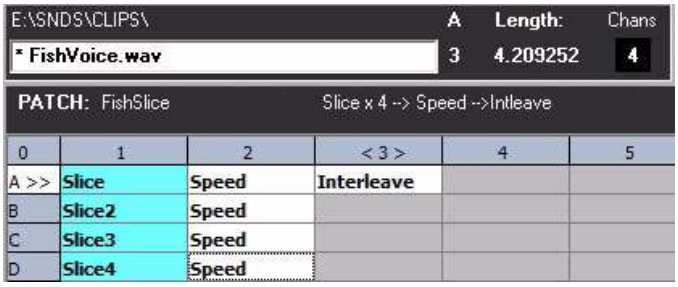
Preset files can contain up to 100 presets, with no limit to the number of possible preset files. The default preset file for a process is loaded automatically, but an alternative can easily be dragged and dropped onto the page.

MULTI-ROW PROCESSING

The Patch Grid is ideal for splitting stereo or multi-channel sounds into separate channels and processing them independently before mixing or interleaving the result.

Cells can be copied, especially onto another row to create a separate process chain. A whole row or part of a row can also be copied to another row. This method is used for ***Bulk Processing***, where each row has a different source sound.

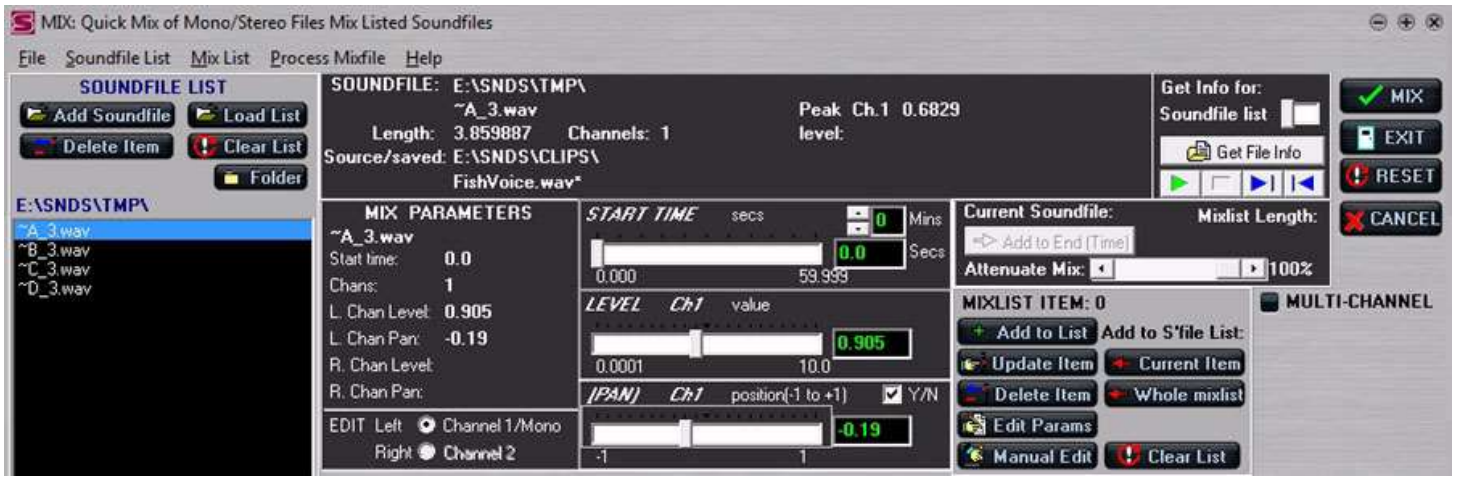
A number of CDP processes have multiple outputs, which Soundshaper places on separate rows, ready for individual processing. In this example, SLICE splits the spectrum into separate bands, which are transposed differently and then interleaved to make a four-channel file:



OTHER FEATURES

MIX PAGE

Soundshaper has a dedicated ***MIX PAGE*** for creating and editing CDP ***Mixfiles***. In this screenshot, mix parameters are set for sounds pre-selected on the Main Page and the mix is run without any need to understand the CDP mixfile format:



Alternatively, files can be added to the CDP ***Mix List*** which can be displayed and edited on the page, before running the mix. Existing mixfiles can similarly be loaded and edited as required.

DATA EDITOR

CDP's **COLUMNS** program is implemented in a dedicated ***DATA EDITOR*** page. **COLUMNS** processes or generates text data files, transforming these in up to 100 different ways. A data file can be sent to the Editor from the Graph-Edit page, altered and sent back. Or a file can be opened in the Data Editor and processed there, with the altered data displayed in an edit box, which can also be manipulated manually.

EXTERNAL PROGRAMS

You can launch up to 10 external programs from within Soundshaper (see **FAVORITES**. For example, your sound can be sent to an external editor, processed with VST or DX plugins, and returned to Soundshaper for further processing. For further details, see **USING SOUNDSHAPER WITH AN AUDIO EDITOR**.

USER BATCH SCRIPTS and CSOUND

Soundshaper has provision to run a user-written Windows ***batch script*** within the patch system. For example, you might create a script which executes a number of processes.

Special provision has also been made to run ***Csound scripts***. These can be synthesis scripts, with no input, or sound-processing scripts with at least one input file. In addition, one Csound opcode – Paulstretch – has been implemented within Soundshaper itself with full parameters. More are expected to follow.

SEQUENCES

Soundshaper has MIDI support for CDP Sequences. CDP's **Sequence2** program plays any number of sources at any pitch, time and level. Soundshaper can convert a standard MIDI file (SMF) into CDP's data format and render it in audio using any suitable source sounds.

HELP

A brief Hint is given for every process in the Main-page menus. Enabling 'QUICKHELP' displays a fuller description when the process is selected, with the option to proceed to the Parameter Page.

On the Parameter Page there is a brief Help description for each process mode and parameter, and a pop-up Quick Help gives detailed parameter ranges and process descriptions, specifically for Soundshaper. On both the Main and Parameter pages, there is access to the Soundshaper manual and the CDP Reference documentation.

HISTORY

Soundshaper maintains a History of processes in text form and prompts you to save this at the end of a session. The History file shows each process, in and out files, and the parameter values.

THEMES

Soundshaper supports a number of different themes, or "skins". These are stored in Soundshaper's subfolder SKINS and are selected from FILE | THEME. The default theme is OFFICE 2007 Black; the previous default, PULSAR. is still available. A limited number of approved skins are supplied.

ACCESSIBILITY

Soundshaper includes comprehensive support for visually impaired users. Almost every control is matched by a menu item, readable by JAWS and other screen readers, and there are extensive associated keyboard shortcuts.
